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Final Report

Former Raritan Arsenal Removal Action Edison, New Jersey

Prepared for:
U.S. Army Corps of Engineers
Huntsville Division
Huntsville, Alabama
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Delivery Order Nos. 0001,
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Prepared by:
IT Corporation
Monroeville, Pennsylvania

RESPONSIVE TO THE NEEDS OF ENVIRONMENTAL MANAGEMENT

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**FINAL REPORT
FORMER RARITAN ARSENAL
EDISON, NEW JERSEY**

**CONTRACT NO. DACA87-91-D-0009
DELIVERY ORDER NO. 0001, 0002, 0003, 0006
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Prepared for

**U.S. ARMY CORPS OF ENGINEERS
HUNTSVILLE DIVISION
HUNTSVILLE, ALABAMA 35807-1957**

Prepared by

**IT CORPORATION
2790 MOSSIDE BOULEVARD
MONROEVILLE, PA 15146**

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1.0 Executive Summary

1.1 Introduction of the Project

International Technology Corporation (IT) was retained by the U.S. Army Corps of Engineers (USACE) - Huntsville Division to perform ordnance and explosive wastes location and removal at the former Raritan Arsenal (FRA) in Edison, New Jersey under Contract Number DACA87-91-D-0009. This contract was conducted in accordance with the scope of work defined under Delivery Order Nos. 0001, 0002, 0003, and 0006. IT subcontracted to EOD Technology Inc. (EODT) to provide ordnance expertise. The objective of this project was to perform an ordnance and explosive wastes location and removal at 17 areas which were identified as suspected contaminated sites by the Letterkenny Army Depot (LEAD) in 1963, the O'Brien & Gere Report in 1989, and the Mefcalf & Eddy Inc. Report in 1991. This Final Report provides historical background of the site and summarizes the work conducted on all sites.

1.2 Site Description

The Former Raritan Arsenal Site consists of approximately 3,200 acres located in Middlesex County, New Jersey, along the banks of the Raritan River. The former arsenal is bordered to the north and northwest by Woodbridge Avenue, and to the southwest by Mill Road and the ILR Landfill.

From 1917 to 1963 the Army used the site for receipt, storage, shipment and decommissioning of ordnance arms, and machinery. During this period, waste materials, including ordnance and chemical agents were buried and burned on-site. Before the Army purchased the Raritan Arsenal site in 1917, the property consisted of farm land with several residences.

Operations at the former Raritan Arsenal were phased out between 1961 and 1963. Starting in 1964, the Army passed land to a variety of owners, including:

- General Services Administration
- Edison Township
- Middlesex County
- State of New Jersey
- U.S. Department of Health, Education and Welfare
- U.S. Environmental Protection Agency
- Army Reserve

- Private Parties.

The site is now the home of Middlesex County College, Thomas A Edison County Park, EPA offices, and Raritan Center, New Jersey's largest industrial park. The redeveloped land on the former arsenal site is concentrated in the northern half of the site, and consists mostly of light industrial facilities, warehouses, and office space. The southern half of the site has remained primarily wetlands, with limited development since the arsenal closed in 1963.

1.3 Description of the Report

This report is divided into nine (9) sections, Appendices, and Attachments.

- Section One is a general introduction of the scope of work.
- Section Two provides the detailed description of the site background and scope of work performed on each site.
- Section Three provides the description of ordnance and explosives disposal operation conducted during the project.
- Section Four discussed chemical data obtained due to waste soil/water produced during the operation.
- Section Five is a phase-out Safety Report as safety, health and emergency response review at the completion of the project.
- Section Six is a site security plan review.
- Section Seven provides a contractor quality control summary.
- Section Eight discussed problems associated with project quality control, and
- Section Nine is a conclusion and lessons learned from the project.

1.4 Summary of Work Performed

IT has reviewed 17 areas which were authorized by USACE to perform ordnance and explosives location and removal work. IT also prepared the Final Work Plan with Amendments No. 1 and No. 2 to state the type of field operations and the procedures of the operations. Ordnance and explosives location and removal have been completed at these following Areas:

- Area 1
- Area 4 (within IT's Scope of Work (i.e. TNT to 1/2"))
- Area 16, Building 643 & 644
- Area 17
- Building 118.

The following area had work in progress when IT demobilized.

- Area 10

Due to lack of funds and the length of the contract, only minimum preparation work was performed but no field operations were conducted at these following Areas:

- Area 2
- Area 3
- Area 6
- Area 7
- Area 8
- Area 9
- Area 11
- Area 12
- Area 13
- Area 14
- Spoil Area at Middlesex County Utilities Authority

This report is an Ordnance Removal Report to describe the work performed, degree of completion at each area, ordnance and explosive recoveries and disposal, and the problems encountered during the project execution. Included within this report is a copy of EOD Technology, Inc.'s Final UXO Removal After-Action Report, and selected attachments pertaining to the Former Raritan Arsenal as Attachment F.

The daily site reports prepared for FRA have not been included with this report. A copy was issued to the USACE project officer at the site.

2.0 Discussion By Areas of Concern

There are 17 Areas at FRA which IT was authorized by USACE to perform the ordnance removal activities. In this section, these Areas are discussed separately as an individual site. The site map with the New Jersey State Plan coordinates is included in this report. In addition, blown up sections of the areas worked at are within Attachment E.

2.1 Area 1

Area 1 is located on GSA/EPA property. It is approximately 0.6 acre. This area was used as a former demolition ground after World War I and into the early 1930's for the destruction of adapter boosters, point and base detonating fuses, and 37 mm to 6-inch gun projectiles. The area is now covered with brush and is in transition to forest.

The LEAD personnel conducted a surface search as part of a decontamination operation in 1963 and UXB investigated the area in 1988. There was no record of any discovered ordnance.

Based on the Delivery Order No. 0003 from the USACE, IT proposed a cleanup plan at this area. Prior to the UXO cleanup operation, wood chippers were used to chip and spread trees and brush that would impede UXO operations at the area. IT's subcontractor EODT conducted the UXO location and recovery operation by using a GA-52B magnetometer, marking hits with red flagging, searching and using shovel and backhoe to excavate the area at early May, 1991. Only metallic scraps were found. All excavated soils were backfilled after the searching was done. No ordnance related items were found at this area. Quality Control was performed by EODT personnel.

2.2 Area 2

Area 2 is located adjacent to Area 3. This 14 acre site was a former demolition ground that was in operation between 1917 and the early 1930's and was used for the destruction of adapter boosters, point and base detonating fuses and various gun projectiles. A previous survey noted some spent brass casings and ammunition component parts found in this Area.

Area 2 is now partially developed with buildings and roadways. Since the closure of the arsenal, there has been no reported incidents involving discoveries of ordnance at this site.

IT planned to have its subcontractor EODT to search the area for ordnance location and recovery under Delivery Order No. 0003. Preparation work for the site has been conducted. The utilities mark-out has been done and right-of-entry was obtained. One fuze, PD-M52, was found from EOD Technology site walk. The actual field UXO searching and clearing work was not performed by IT Corporation due to lack of funding, and contract time constraints.

2.3 Area 3

This area is approximately 22 acres in size. It was identified as a demolition and burning grounds. It was used from WWI until 1948 for the destruction of adapter boosters, fuses, and projectiles. Various types of fuses, primer detonators, small arms, artillery primers and pyro techniques were destroyed in aboveground destruction chambers and ground pits. Surface burning of smokeless powder and loose low and high explosives were also part of the operation in this Area. The residue from these burning operations was buried in some portions of Area 3 to a depth of 5-6 feet. During the WWII period, Area 3 was also used for storage of small arms ammunitions and cartridge cases.

At previous investigation of the area, heavily corroded unexploded items, spent casings and unburned propellant grains were found. In 1963, LEAD decontamination operation fenced off a 1.9 acre parcel (which was the burn Area and demolition pits) and performed a surface search for ammunition items outside this fenced off section. Also as part of the O'Brien & Gere Contamination Evaluation, 20 ordnance related items were found, one of which was identified as explosive.

In March of 1992, there were several ordnance related items found on the surface at Area 3 during an investigation by Dames and Moore personnel. These items were 39 each MK II grenade fuzes, 3 each 3.5-inch rocket fuze, 5 each Miscellaneous fuze components, 1 each MIII projo fuze, and 1 each stokes mortar. These items then were taken to the Demolition Area (part of Area 12) to be disposed of.

IT had planned the ordnance searching and removal activities based on Delivery Order No. 0003. The site walk has been completed. The underbrush was cleared and chipped in the wooded area. IT has obtained Right-of-Entry, and arranged utilities mark-out at the area. Due to lack of funding, IT was not able to have its subcontractor to perform the ordnance location and removal operation at this area.

2.4 Area 4

This area is located in Raritan Center Business area. Area 4 was identified by FRA personnel as the site of renovation operations conducted by the Columbia Salvage Company and the Delaware Steel and Ordnance Salvage Corp in the 1920's. The area was used as high explosive salvage and melt-out area for demilitarization of various calibers and types of ammunition from 75mm to 12-inch projectiles. A portion of the area approximately 2 acres was fenced and access restricted by USEPA before IT's subcontractor started performing any cleanup operations. Area 4 site map showed the fenced-in area. Bulk high explosives (TNT), explosive residues, and several projectiles were found in this area during previous surveys. The fenced part of Area 4 contains trees and shrub. The remainder of Area 4 is occupied by commercial buildings and roadways.

According to Delivery Order No. 0002, IT proposed in it's 1991 Final Work Plan to cleanup the fenced area at Area 4. The site was first inspected for surface UXO by EOD personnel. All vegetation 3-inches and less in diameter were cut and processed through a chipper and then dispersed on site. Grid search lanes were laid out and a surface/sub-surface UXO location and recovery operation was commenced. A trackhoe and a front-end loader were used to excavate the area. Hand excavation was utilized once the excavation was within 12-inches of the suspect item. A sifter was used to sort the excavated soils for raw explosives and any ordnance. The material was sifted and recovered down to 1/2" sized material.

On a daily base operation, the recovered raw explosives were weighted and placed in a plastic container and labeled, then the container was transported to the ordnance storage box pending detonation. The TNT and any ordnance items disposal will be discussed in Section 3.0. Prior to exiting Area 4 fenced area, all personnel and equipment passed through a decontamination station followed proper decontamination procedure from The Safety, Health and Emergency Response Plan (SHERP), Appendix A of Final Work Plan.

TNT and ordnance removal operation in the fenced area is fully completed. EODT Quality Control personnel conducted QC work and the result was satisfactory. Table 1 listed all ordnance items and explosives recovered at Area 4. IT has completed the authorized work at Area 4, fenced area. This area requires additional remediation of the soil and groundwater.

2.5 Area 6

Area 6 is adjacent to a closed Sulphuric Acid manufacturing plant. This plant has been closed for several years. The vegetation consists of small trees with heavy to sparse shrubs in two separate one acre plots.

This area was identified as contaminated by FRA employees in 1961 due to burning operations conducted up to the closure of the arsenal. FRA employees also indicated that no detonation was performed in this area during their tenure (1939 to Closure). In January 1988, UXB conducted spot checks with a magnetometer (an ordnance/metal locator) in conjunction with the O'Brien & Gere contamination evaluation (November, 1989) identified no ordnance related objects at this area. No geophysical surveys were conducted in the area.

According to Delivery Order No. 0006 from USACE, in IT's 1991 Final Work Plan, Amendment No. 1, IT proposed to have its subcontractor performing excavation at the area and examining the excavated soils and exposed ground surface for any munition components or any additional hazards not previously addressed. This work was not performed by IT due to lack of funds and contract expiration. However, IT initiated the site preparation such as confirmed with USACE for obtaining Right-of-Entry to the site, arranged to have related utility companies to mark-out the utilities when IT informs them to do so.

2.6 Area 7

Area 7 is located in a parking lot of a maintenance/office complex. The size of the site is approximately 35 x 25 feet. There are no trees or plants in the area to impede surface operation. The surface is mostly asphalt at the area.

FRA personnel identified Area 7 as a contaminated area in 1961 due to its use for ammunition renovation and salvage operations from 1929 to closure of the arsenal (information from "Decontamination Report" - LEAD, October, 1963). The facility was called the Ammunition

Renovation Plant and, unlike earlier salvage operations, was run by the arsenal. Area 7 included the location of the Breakdown Building (used to disassemble rounds prior to meltout and also housed a burn vessel), the washout tank, the drawing tank, the settling tank, and several storage buildings.

Decontamination of the Area was performed by LEAD personnel in 1963. The decontamination of the Area consisted of excavating and burning conduits from the Washout Tank to the disposal ditch. The disposal ditch was approximately 200 feet from the washout tank but its exact location is not known. The washout tank itself was not decontaminated but was fenced off with restrictions placed on further use. During the decontamination, small arms cartridges and projectiles were found adjacent to the Breakdown Building. The ordnance material was believed to be processed ammunition from the disassembly and burn operations conducted in the Breakdown Building. Approximately 7,000 cubic yards of soil was removed to clean the Area of this contamination. The material was transported to Area 3.

According to O'Brien & Gere Contamination Evaluation Report (November, 1991), UXB conducted an investigation at Area 7 and the results of magnetometer surveys were inconclusive due to many ferrous objects in the vicinity. Soil and groundwater tests did not show the presence of any explosive contamination.

There is presently a building at 350 Raritan Center Parkway which lies over a portion of Area 7. No ordnance related material was found during its construction.

In IT's 1991 Final Work Plan, Amendment No. 1, IT proposed to have its subcontractor sweep the area with magnetometer and commence clearing surface debris and any ammunition components utilizing shovels and/or Case 580 loader/backhoe. All excavated soil and the exposed ground surface would have been examined for any ammunitions, explosives or hazards not previously mentioned. No work was performed at this Area due to lack of funds and contract expiration.

2.7 Area 8

This Area was previously used for storage and loading of small arms ammunition and components. The size of the site is approximately 10 to 12 acres. The vegetation consists of

small trees, bushes, vines and friars. A small stream enters at the southeast corner and flows northerly exiting at the northeast end of the site.

During the early 1930's, fire and explosions scattered large grains of unburned 16 inch (gun) powder over this area. The area was later used during WWII for storage of overseas returned ammunitions and inert components of various types. During the 1963 LEAD cleanup operation, all propellant powder found was burned and the entire area was diced to 6" and surface searched. It was released to Federal Warehouse without restrictions.

Construction of the building at 450 Raritan Center Parkway which lies over Area 8 was completed in 1987. Soil investigations for this building site reveal that prior to 1980, this site was moderately wooded with an active drainage ditch crossing the site (Information from Converse Consultants East, May, 1987). The northeast corner of the site was a swampy Area. Between 1980 and 1987, the drainage ditch and swampy Area were filled in and the entire wooded area was cleared and stripped of its topsoil. Several feet of the underlying sandy soils were excavated and used as structural fill for other sites within Raritan Center. Subsequently, the site was then used as a spoils area for unsuitable fill from neighboring sites. In 1987 when 450 Raritan Center Parkway was to be built, the thickness of uncontrolled fill ranged from 2.5 feet to 12.0 feet. This uncontrolled fill had to be replaced by suitable fill prior to construction.

Based on the information from Report of Soils and Foundation Investigation, 450 Raritan Center Parkway (Converse Consultants East, May, 1987), IT planed to have its subcontractor EODT to lay out sweep lanes in specific sections and clear the area working in grids. Due to lack of funds and time constraints, no work was performed at Area 8.

2.8 Area 9

Area 9 was used as a magazine storage area. It is approximately nine acres in size. Due to the construction of office buildings and a main roadway, it is only possible to clear about 3/4 of an acre at the present time. The Area contains many trees and shrubs.

This Area was identified by FRA employees due to OEW contamination resulting from the explosion of magazine H-65 on November 9, 1943. While French-made 152 mm loaded cartridges were being loaded from magazine H-65 to freight car, disturbance to the cartridges

ignited one of them and started a fire in the freight car. The fire spread to magazine H-65 and to a nearby freight car loaded with 90mm complete round ammunition. The explosion resulted in the detonation of 90mm ammunition stored in the freight car and magazine. The magazine contained the following ordnance:

- Semi-fixed cartridges (152mm, 90mm, 35mm)
- 90mm full rounds
- 37mm full rounds
- Hand grenades
- Miscellaneous small arms
- Impulse charges

The investigation was conducted after the incident and the following ordnance on the surface or buried in the surrounding area were found:

- Steel and brass fragments
- Live 90mm ordnance
- 152mm cartridge cases
- 90mm cartridge cases

The LEAD decontamination operation discovered several 35mm cartridges. In 1987, UXB clearance operation showed only a total of 19 "ordnance related items" found as result of the search, none of them were potentially hazardous. After the 1987 cleanup operation, 115 Newfield Avenue was constructed.

Based on Delivery Order No. 0006 from the USACE, IT was requested to perform a thorough search for ordnance and its related items at Area 9. This Area was not started due to lack of funds and time constraints.

2.9 Area 10

This area is partially located on the campus of Middlesex County College and partially located in Thomas A. Edison Park. It was used for ammunition magazines and depriming cartridge cases. The site is approximately ten acres in size. The vegetation consists of bushes and a wooded area with a lot of trees (mostly are small sized) with small walkways and jogging trails

throughout. Currently, the area appears to be in the process of being landscaped with several new sprinkler systems installed recently.

This area was not listed in LEAD Report or Archives Search Report by Metcalf and Eddy, Inc as known contaminated area by specific type ammunitions.

With Delivery Order No. 0006 from the USACE, IT was responsible to search the area. Some small trees (diameter 3-inch or less) were cut off by a brush-hog. A portion of the area was secured by caution tapes, orange safety fence and barricades. Sweep lanes were layed out and magnetometer was used for metal/ordnance location. Shovel and/or case 580 loader/backhoe was used to excavate the area when it was necessary. Personnel discovered 13 French rifle grenades and several grenade fuzes on site. During the ordnance searching and clearing operation, Edison Park Police department coordinated with IT for the site security. During the off-work hours, weekend and holidays, Edison Park Police provided the security at the site to keep the curious park visitors out of the site.

IT was not able to complete the ordnance searching and clearing operations at the site due to lack of funding and time constraints. With USACE's instruction, IT arranged to install a chain-linked fence around the uncompleted area to protect the public. After the fence was installed, IT canceled the site security schedule with Edison Park Police under USACE safety officer's authorization. This fence will be removed in the future after the ordnance removal action is completed at the Park.

An Ultra-Sonic Ranging Device (USRADS) was also utilized at Area 10. This report has been previously submitted.

2.10 Area 11

Area 11 is located by Raritan River and is approximately 6.5 acres in area. This Area consists of dredge spoils from Raritan River channel with potential hazards and contamination of subsurface unexploded ammunition, grenades, and mortar shells. The vegetation consists of marsh type grass (6-8 feet in height) and in many areas standing water. It was identified as a suspect area due to the discovery of hand grenade components and live small arms cartridges behind one of the dock sheds in 1961.

During the 1963 LEAD cleanup of Area 11, a large quantity of buried ammunition was removed from a 0.52 acre parcel in the vicinity of the former discovery. The material was dredged with a dragline and discovered at depths of up to 15 feet. After dredging, a check with a mine detector indicated the area was still contaminated. This heavily contaminated section of Area 11 was fenced off and restricted.

Based on USACE's modification to Delivery Order No. 0006 in which Area 11 was added to the areas to be cleared, IT proposed to lay out sweep lanes and search for ordnance and its related components. In early March, Dames & Moore personnel arrived on site to do soil-gas sampling for soil remediation at the area. During their site walk and their field activity, a number of ordnance items were found which were: 54 each French rifle grenade, 9 each MK II grenade, 8 each 20mm round, and 1 each 76mm projectile. These items were immediately removed and taken to the magazine area for storage. IT was not able to start the actual field work to cleanup the ordnance on site due to lack of funding and time constraints.

2.11 Area 12

Similar to Area 11, Area 12 is the site where dredged material from the Raritan River were periodically deposited. This area consists of a UXO disposal site in a small cleared area (approximately 0.5 acres) within the eastern end of Area 12. It has hazards and contamination consisting of explosives and explosive munitions as a result of explosive testing and disposal operations authorized by the USACE.

From Delivery Order No. 0006 and its modifications, IT was authorized to use part of Area 12 to be ordnance detonation site, operating by EOD personnel. All ordnance and explosives unearthed during the cleanup operations were detonated on this site. Also, USACE requested IT to arrange and perform the ordnance searching and removal at entire Area 12. IT has proposed the cleanup plan at the area but no work was conducted due to lack of funds and time constraints. Courtesy sweeps were performed around the detonation to clean up visible "kickouts".

2.12 Area 13

Area 13 was part of the waterfront dock on the Raritan River channel. This area may have ammunition items lodged in the bottom of the river around the dock area. The dock is

approximately 2000 feet long and parallels to the river. No investigation of the area has been conducted since closure of the arsenal.

According to Middlesex County Utility Authority employees, some grenades and gun shells were recently found by the dock area while dredging the River to install an outfall structure for a wastewater treatment plant. This matter was brought to the Army's attention at that time.

In Delivery Order No. 0006 modification on September 30, 1991, Area 13 has been added on to the Areas which were to be reviewed. IT proposed the scope of the work at the area in Amendment No. 2 in Final Work Plan. Also, IT conducted several site walks, discussed safety concerns, type of equipment needed on site, etc. for the actual field operation. But the field operation did not start due to lack of funding and time constraints.

2.13 Area 14

Area 14 is approximately 150 acres in size and consists of dredge spoils from the river channel and dock area. Similar to Area 11, Area 14 was possibly contaminated by explosives and explosive munitions. This area is heavily vegetated in parts and other areas are covered with water.

In 1988 ordnance locator surveys conducted by UXB (part of the O'Brien & Gere Contamination Evaluation) did not include Area 14 as part of UXB's investigation. USACE modified the Delivery Order No. 0006 on September 30, 1991 to add Area 14 to the areas need to be surveyed and cleaned. IT proposed the work plan at the area and conducted several site walk with its subcontractor. IT also had a meeting with the owner of the property in order to get more information for the site and discuss the Right-of-Entry requirements. Due to lack of funds and time constraints to the project, the actual cleanup operation was not started.

2.14 Area 16

Area 16 is heavily vegetated with marsh grass over six feet in height. It is located undeveloped part of Raritan Center Industrial Park. There were storage buildings and magazines at this area when the former arsenal was in operation. In 1985, a grass fire destroyed building 643. During the demolition of the building, a large amount of 37mm shells were found below the ground surface and were removed by the 54th EOD Detachment Unit from Fort Monmouth around

building 643. The shells were identified as "37mm, armour piercing, anti-aircraft shells with a pressed block powder charge, probably pre WWII". These shells were still alive. A surface cleanup then was performed and access to the area restricted.

The Delivery Order No. 0001 authorized IT to perform a thorough ordnance searching and cleanup at this area. An area around building 643 then was cleared and grubbed. EOD personnel layed out 5-foot apart sweep lanes and carefully searched by magnetometer. A Cat 235 excavator and Cat 963 loader with a four-in-one bucket were used to excavate soil. During excavation a water pump was used due to the water table being closed to ground surface. All soil excavated were carefully put through a sifter with screen openings no larger than an inch in size. This ensured that all 37mm projectiles and any other UXOs were recovered from the area. After all of the UXOs were removed, the earth and fill were pushed back into the excavated area. Before the completion of ordnance removal at building 643, a site walk and surface sweep revealed some ordnance around building 644 area. IT reported the discovery to the USACE and received permission to conduct the ordnance cleanup activities around building 644 after the completion of ordnance removal at building 643 area. An additional sweep search was performed around buildings 645 and 646. No ordnance was found around these two buildings.

All unearthed UXOs then were stored in the storage boxes with triple locks and the boxes were placed in the cage on site. At the end of each working day, the cage was safety locked. These ordnance were detonated at demolition area (part of Area 12) later.

To the completion of ordnance location and removal at building 643 and building 644 area, there were 29,194 each 37mm projectiles around buildings 643 and 955 each 37mm projectiles around building 644 unearthed. Both the QA and QC inspections have been performed at both sites.

During the period of ordnance removal operations, Building Security Services was used as site safety guard 24 hours a day. Access to the area was limited to authorized personnel only. The balance of Area 16 remains to be investigated.

2.15 Area 17 and Wastepile

Area 17 is located on the Middlesex County College Campus. It was a salvage and property disposal area during the former arsenal operation. The area is approximately 10 acres, but only a small portion of the area is accessible for searching and cleanup.

In May 1991, IT received Delivery Order No. 0006 from the USACE to perform removal actions at Area 17 accessible areas. IT then proposed work plan and have its subcontractor conducted ordnance location and removal operation. A portion of Area 17 near Gym building and Student Center was searched for ordnance by using magnetometer. When excavation was required, shovel and Case 580 backhoe were used to excavate the grass covered ground. Five test pits were excavated. Scrap metal pieces were unearthed during the excavation. There was no ordnance found at these five test pits. The site restoration has been completed.

Also, there was a waste pile near ball field on the College Campus. Personnel noticed the wastepile and suspected that it might be contaminated by munitions. USACE officer authorized IT to have EOD personnel to examine the wastepile. Through the search, several cartridge cases were found from the wastepile. The discoveries were transported to the Area 16 storage cage for disposal later.

Area 17 was also used to test and set protocol for the use of USRADS in November 1991.

2.16 Spoils Area

This area is covered with river bed spoils that was dredged up during construction of the Supplemental Outfall Facilities of the Middlesex County Utilities Authority. The size of the area is approximately four acres. During dredging, French rifle grenades were recovered and deposited at the site.

Under Delivery Order No. 0006, IT was authorized to perform ordnance searching and removal actions at the Spoils Area. IT proposed the work plan for this area, conducted several site walks and also held meetings with USACE and property owner to discuss the removal and on-site disposal procedures and safety matters, etc. During these site walks, several ordnance items were seen on the surface. But no actual field operation was started due to lack of funding and time constraints.

2.17 Building No. 118

This area is located on the Middlesex County College Campus. The size of the area is approximately 10 acres. Vegetation consists of very large oak trees, maple trees and grass. The possible contaminants were grenades, 75-mm shrapnel projectiles, adapter boosters and fuses which were buried near Building No. 118.

Under Delivery Order No. 0006 from the USACE, IT was assigned to lay out sweep lanes and locate any obvious hot areas. The area of approximately 2 acres then was fenced and access to the fenced area limit to authorized personnel only. All the "hot" areas were excavated by shovel and/or Case 580 or 426 loader/backhoe. All removed soil and exposed ground surface were examined and cleared of ammunitions or any other ordnance not previously mentioned.

During the ordnance searching/excavation operation, there were two underground storage tanks (UST) uncovered. These two tanks were at the place the ordnance search had to be performed. With USACE's authorization, IT removed both tanks and followed NJDEPE tank closure requirements. Also IT had removed a concrete driveway behind the Building No. 118, and a part of concrete case with cable/power lines due to their partial ordnance contamination. At this fenced area, a total of 83,873 each adapter boosters were unearthed behind the building No. 118 within an area of approximately 10,000 square feet. During the daily base operation, all unearthed adapter boosters were transported to a safe ordnance storage cage at Area 16 and the boosters were stored in triple locked steel boxes. Each time, the Middlesex County College Police escorted the ordnance transporting vehicle through the campus to provide safety to the public. Also, security was stationed at the fenced area to prevent unauthorized personnel's access to the site during the off-work hours, weekends and holidays by both Campus Police and Building Security Services Inc.

Accompanied with satisfied QA/QC by USACE officer, ordnance searching and clearing at this area is completed. The excavated areas had been back filled with ordnance-free soils. The site restoration, such as removed tree replacement, grass reseeding, fuel storage tank reinstallation, etc., has taken place.

3.0 Ordnance Disposal

Under USACE's authorization, part of Area 12 was used as the demolition (demo) site for ordnance disposal. At the beginning of the project, Army EOD from Fort Monmouth, New Jersey performed detonation to destroy the unearthed unexploded ordnance periodically as requested. In July, 1991 IT proposed ordnance disposal plan and prepared a Standard Operating Procedure (SOP) for demilitarization of military ordnance. The plan was approved by the USACE. A crew of 3 ordnance disposal technicians were mobilized to the demo site. A safety plan was established for demilitarization of UXOs at the demo site.

All ordnance, ordnance related items and TNT explosives recovered from each site stored at Area 16 storage cage then were destroyed at the demo site on a daily base operation. Listed below are summary of ordnance, ordnance related items and explosives uncovered from the areas during the project and were detonated and destroyed at the demo site by EODT:

Area 2	1 fuse, PD-M52
Area 3	39 MK II grenade fuzes 3 3.5 inch rocket fuzes 5 miscellaneous fuze components 1 M III projectile fuze 1 Stokes mortar
Area 4	12,360 lb. TNT bulk explosives 1 each 20 lb. bomb 21 75mm projectiles 3 projectile fuzes 9 projectile adapter boosters 1 9.2 inch projectile 3 booster cups
Area 10	13 French rifle grenades
Area 11	54 French rifle grenades

Area 16 Building 643
29,194 37mm projectiles

Building 644
955 37mm projectiles

Bldg. 118 83,873 adapter boosters
1 MK II grenade

Each day the unexploded ordnance, its related items or TNT explosives were transported to the demo site from Area 16 storage cage. They were placed into the chosen disposal pit. The ordnance or TNT then were counter charged with binary yellow stick explosives. The explosive was primed with Primadet nonelectric detonators. The nonelectric detonator then was initiated by 2 electric blasting caps. Shot was covered by hand with sand to a depth of 12", and an additional 24" of sand was placed by a loader. Five shots were set up at one time. EODT conducted tests to establish the amount of TNT and binary explosive needed and allowed them to remain within the acceptable noise level.

To the completion of the project, all ordnance and TNT recovered were destroyed, except 487 adapter boosters which were discovered at Building 118 site in Middlesex County College during the QA/QC check by the USACE officer. These 487 adapter boosters were stored at Area 16 storage cage and safely locked by triple locks.

After each detonation, the scrap metals were collected and stored in a roll-off. These scrap metals were weighed and turned in to the DRMO in Bayonne, New Jersey periodically during the project. All documents were signed by the USACE project officer, USACE New York District personnel, and EODT supervisor.

4.0 Chemical Data Discussion

4.1 Area 4 Wastewater Holding Tank Sample

At Area 4, the main operation was TNT bulk high explosives location and removal. EOD personnel worked on the site wore protective clothing. After the daily operation, they decontaminated the equipment, tools and their working outfit with tap water. The water was then collected in a 5000-gallon wastewater holding tank.

At the completion of TNT removal in Area 4, an IT field engineer sampled the wastewater from the holding tank and sent the sample to Environmental Testing and Certification Corporation (ETC) to be analyzed for TNT and Lead. The sample results showed non-detectable for TNT at detection limit of 125 ug/l (ppb) and low concentration of 170 ug/l (ppb) for Lead. See Attachment A for the sample results and QA/QC control data.

IT applied for a permit from Middlesex County Utilities Authority (MCUA) and Edison Township Health Department to discharge the wastewater to the local sewer since the wastewater is not hazardous. This action was granted and the water disposed of accordingly.

4.2 Building No. 118 Site 112-gallon Gasoline UST Postexcavation Soil Samples

During the ordnance removal operation, a 112-gallon gasoline UST was discovered which was not in use by Middlesex County College. Since the ordnance removal had to be done at the UST location, the tank was removed and postexcavation soil sampling was conducted. Three soil samples were taken along the former tank center line location. The samples were analyzed for Total Petroleum Hydrocarbons (TPHC), Base Neutrals with a forward library search (B/N + 15), Volatile Organic Compounds with a forward library search (VOC + 15), and Lead.

A UST closure report was prepared by IT and submitted to NJDEPE in order to conform the New Jersey UST closure requirements. Attachment B is the closure report with sample locations and sample results summary.

The analytical results showed either non-detectable at detection limit or below the NJDEPE action levels. There was no further excavation required. Any soils formerly excavated at the tank location were drummed in two drums and were disposed of off-site.

4.3 Building No. 118 Site 1500-gallon No. 2 Fuel Oil UST Postexcavation Soil Samples

A 1500-gallon No. 2 fuel oil UST was discovered at the point where ordnance removal was required. This tank was in use by Middlesex County College to supply heating oil to Building No. 118. Overfill/leakage was suspected and the tank was removed. An IT Corporation field engineer took three postexcavation soil samples at the removed tank location. The samples then were analyzed for TPHC. The TPHC concentrations for three soil samples are non-detectable, 950 ppm, and 3900 ppm, respectively. One of the samples, with a TPHC concentration of 3900 ppm, exceeded the current BUST action level of 1000 ppm. Comparison of the individual concentrations detected in other two samples and with the results of the tank integrity test support the contention that the contamination is likely attributable to the piping connections at the North end of the tank. Therefore, the tank piping was located, removed and disposed of properly. Five soil samples were taken along each 15 feet of the piping, and analyzed for TPHC. Concentration of TPHC for all five soil samples were non-detectable at detection limit of 21 ppm to 24 ppm. According to the analysis results, piping connection were in good condition. The soil contamination maybe resulted by over fill or slow leaking. Additional soil excavation then was conducted twice to excavate to a depth of 13 feet which is approximately 9 feet below the former 1500-gallon tank base. The excavated soil will be disposed off-site. Six additional postexcavation soil samples were taken and analyzed for TPHC. The results of analysis showed 1700 ppm and 5400 ppm at a depth of 6 feet below the ground surface and non-detectable or 21 ppb at a depth of approximately 13 feet below the ground surface.

A closure report was prepared by IT Corporation to NJDEPE to be in compliance with the State UST closure and discharge requirements which was sent to NJDEPE on January 21, 1992. See Attachment C for the closure report.

4.4 Building No. 118 Site Soil Classification For Disposal

The soils from postexcavation after the 112-gallon gasoline tank and 1500-gallon No. 2 fuel oil tank removed were sampled as a composite twice and one sample for each time. The first sample was analyzed for TPHC, Total Organic Halogen (TOX), PCB's, VOC, Lead, and Flash Point. The second sample was analyzed for TCLP-Lead. The analysis results showed non-detectable for TPHC, PCB's, VOC, and TOX, and showed non-ignitable for Flash Point. Lead had a concentration of 29 ppb which is well below NJDEPE action level of 250 ppm. The TCLP-Lead result showed 0.051 ppm (51 ppb).

Based on these analytical results, the soils are considered non-hazardous. These soils were disposed off-site as non-hazardous material. Also, after the additional postexcavation the excavated soils were left on plastic sheet and covered with it. The Soils will be disposed by Middlesex County College. These soils were sampled as one composite sample and analyzed for waste classification parameters: TPHC, TOX, PCB's, VOC-BTEX, PH, TCLP Lead and Flash Point. The sample results have been sent to Middlesex County College for their disposal information.

In Attachment D are the Analytical Certificate of Analysis documents on the soils from Building 118.

5.0 "Phase-Out" Safety Report for Safety, Health and Emergency Response Review

**ACCIDENT PREVENTION PROGRAM
FORMER RARITAN ARSENAL PROJECT
SITES: 4, 10, 16, 118, DEMOLITION AREA**

IT Corporation prepared the site-specific Health and Safety Plan to be strictly adhered to by IT Corporation and subcontractor personnel during field activities of the Former Raritan Arsenal project.

The following actions were conducted by IT Corporation to ensure corporate, state, and federal health and safety regulations and guidelines were complied with by IT Corporation and subcontractor personnel.

- Prior to job start-up, a site-specific health and safety briefing was presented by the Mr. Jay Keough, project CIH. This four hour briefing concentrated on the review of the health and safety plan, which included the potential site-specific health and safety hazards present on the project, work procedures, and appropriate emergency procedures.
- An additional four hour safety briefing was conducted by Mr. Keough and Mr. Tracy Estes, CSP (on-site H/S person) for operations conducted at Area 4 which involved excavation of UXO and TNT-contaminated soil.
- Daily tailgate safety meetings were presented at each job site which emphasized the following: chemical and physical hazards that may be anticipated, personal protective equipment to be utilized, review of the previous day's operation and emergency procedures which included first aid, fire, police, and hospital information.
- Monthly safety audits were conducted at each job site for the duration of the project. The safety audits verified the following safety components were being implemented: health and safety issues were properly addressed, proper job set-up was present, daily tailgate safety meetings were being documented, health and safety hazards were communicated to the on-site personnel, and adequate personal protective equipment was being utilized..

The following personnel conducted monthly health and safety audits at the various job sites:

Jay Keough, CIH
Tracy Estes, CSP
Dolly Li, Site Engineer

All health and safety deficiencies were corrected immediately and follow-up inspections were conducted to verify the corrections were implemented.

1.0 Introduction

International Technology Corporation (IT) was contracted by the U.S. Army Corps. of Engineers, Huntsville, AL District to provide remedial services to remove unexploded ordnance (UXO) and bulk trinitrotoluene (TNT) from the former Raritan Arsenal, Area 4, located in the Raritan Business Center in Edison Township, New Jersey.

The project was conducted successfully, meeting all the safety, health, and emergency response requirements. No adverse incidents such as lost-time injuries were experienced by IT employees or subcontractors.

2.0 Air Monitoring Program

In accordance with the project contract specification, an air monitoring program was developed and implemented for the remediation activities conducted at Area 4. The approved air monitoring program is outlined in the Health and Safety Plan addendum of the Safety, Health, and Emergency Response Plan (SHERP). This program established requirements for both personal sampling and real time monitoring. Due to the potential for airborne TNT-contaminated dust, contractor personnel wore Level C protection during excavation and screening/separation operations which were being performed in the exclusion zone.

2.1 Personal Air Sampling

Personal air sampling was performed once a week from November 15, 1991 to March 4, 1992 to measure for total respirable particulate. The following equipment was utilized to collect the air samples: two Gillian personal sampling pumps, model HFS-513A, and 5 umPVC filters. The Gillian personal sampling pumps were calibrated before and after each use. The calibration methods were documented on the Field Activity Daily Logs (FADL) and IT calibration sheets. NIOSH analytical Method 0500 was utilized to analyze for total respirable dust.

Two IT contractors were randomly chosen to wear the personal sampling pumps during each weekly sampling session. The contractor personnel were chosen as being most likely to be exposed to potential TNT-contaminated dust during the screening/separation operations or the excavation operations.

Due to the fact that NIOSH analytical Method 0500 measured total dust and could not identify TNT particulate, all sample analysis were interpreted as total TNT particulate, as a worst-case analysis. Actual TNT concentrations varied from trace amounts to 10 percent TNT in the soil.

The decision to analyze for total dust particulate instead of total TNT particulate was due to the expense and time delay of the TNT particulate analysis.

Analytical results were reviewed as they became available and were consistently found to be below the Permissible Exposure Level (PEL) of TNT. The PEL of TNT is 0.5 mg/m³.

The results of the personal air sampling are noted in Attachment 1.

2.2 Real-Time Air Monitoring

Real-time air monitoring was conducted continuously at Area 4 and documented on a hourly basis, both in the exclusion zone and the site perimeter during all remediation activities where the exposure to potential contaminated TNT dust existed. The instrument utilized for real-time air monitoring was MIE Inc. Model PDM-3 Real Time Aerosol Monitor (mini-ram).

Two mini-rams were utilized at Area 4. One mini-ram was located in the exclusion zone, adjacent to the area which had the potential of creating airborne TNT-contaminated dust (screener/separator or excavation operations) and the other mini-ram was located in the support zone perimeter downwind from the exclusion zone.

Real-time air monitoring readings were recorded hourly in the exclusion zone and were conducted hourly around the site perimeter. The IT subcontractor would provide the real-time readings, taken from the exclusion zone, to the on-site IT Health and Safety Coordinator. The IT Health and Safety Coordinator would walk the site perimeter hourly to record the real-time air monitoring readings and evaluate potential off-site migration of TNT-contaminated dust.

All air monitoring results were recorded on Real Time Air Monitoring Logs and also recorded on the FADL's. The Real Time Air Monitoring readings were communicated to on-site personnel during the daily tailgate safety meetings. The readings obtained during project activities were below the action levels listed in the addendum to the SHERP.

3.0 Cold Stress Monitoring

Cold stress prevention and control measures were implemented for personnel at Area 4. A tent, containing electrical heat sources, was located adjacent to the decontamination line to provide a warm break area to personnel. Also, contractor personnel had an office trailer in the support zone to keep warm during extended breaks, such as lunch. Instructions were provided on the signs and symptoms of cold stress during the daily tailgate safety meetings and personnel were instructed to leave the work area if these signs/symptoms appeared. No adverse cold stress related incidents were experienced during the project.

4.0 Decontamination

4.1 Personnel Decontamination

A personnel decontamination area was established on site to ensure that all site workers maintained a high degree of personal hygiene and minimize the possibility of exposure to site contaminants.

The decontamination area was constructed immediately outside the exclusion zone in the contamination reduction zone (CRZ) to facilitate the removal of protective outer clothing. All personnel exiting the exclusion zone passed through this decontamination area to remove gross contamination and outer protective clothing prior to entering the support zone. All protective clothing was disposed in 55-gallon drums and were disposed of properly.

Also, a support trailer was located in the support zone adjacent to the contamination reduction zone where workers when decontaminated could utilize the shower and hot/cold running water. An adequate supply of towels and soap was supplied to the subcontractors.

Waste water from the trailer was collected and disposed of from the site.

4.2 Equipment Decontamination

Any equipment entering the exclusion zone was assumed to be contaminated and was decontaminated at the equipment decontamination pad in the CRZ. It was the responsibility of the on-site Health and Safety Coordinator to inspect all decontaminated equipment prior to it leaving the site. Equipment used in the decon process consisted of a high pressure washer, decon pad with a water collection sump and stiff bristle brushes for removal of heavy materials. Site workers performing equipment decontamination were dressed in Level Modified D with splash protection. A copy of all equipment decontamination certification forms are included as Attachment 2.

5.0 Medical Surveillance

All personnel entering the exclusion zone or CRZ were required to undergo medical examination within 30 days prior to participating in on-site operations and within 30 days after the conclusion of the work. The medical exam protocol met the requirements of OSHA standard 29 CFR 1910.120. The exam consisted of the following:

- Medical History
- General Physical Examination
- Pulmonary Function Testing (FEV1.0 and FVC)
- Biological Profile - 20 channel
- CBC
- Urinalysis
- Methemoglobin
- Urine Heavy Metal
- Serum Lead
- Zinc Protoporphyrin
- Chest X-ray
- Otoscopic Exam
- Visual Acuity
- Audiometric Exam

6.0 Site Security Plan Review

During the ordnance location and removal operation, security guards were required at Area 16, the Demolition Area, Building 118, and Area 10. IT coordinated with Edison Township Fire Department, Edison Park Police, Middlesex County College Campus Police, and Building Security Services Inc. to successfully provide the site security and safe environment. Basically, the security schedule was activated during the off-work time, weekends, and holidays. But at Area 16 and Demolition Area, the security was scheduled 24 hours daily to limit the unauthorized personnel closeby the demolition Area. Signs like "Blasting Area - Danger", "Turn-off Engine - Detonation Area", "Restricted Area", etc., could be seen at least 500 feet away from the Demo Site. Also, the Edison Fire Department provided a crewed fire engine each day if detonation was scheduled. There were no injuries due to access to the sites by the public. Some small incidents such as missing locks from the gate, stolen trailer steps, etc., occurred during the project.

Fire damage to the "brush-hog" equipment took place on September 11, 1991. IT contracted Rothberg Company to clear out brush in Area 10, prior to EODT's searching, excavating and removal of unexploded ordnance. The clearing procedure was being accomplished by the utilization of a "brush-hog" mechanism, which was attached in front of a bulldozer.

When the Rothberg employee was operating a bulldozer with the "brush-hog" attached to the front. The operator noticed smoke emitting from the "brush-hog" unit and turned off the "brush-hog" operation. IT field engineer was at the site and utilized fire extinguisher on the smoldering fire. Employees immediately notified the Edison Fire Department.

The probable cause of the fire was apparently by either brush getting caught in the blade making the engine overheat, or brush was caught up against the hot motor, causing the brush to catch on fire.

The fire rendered the "brushing-hog" unit inoperable. No persons were injured during the fire fighting incident. No brush fire occurred due to the quick action of personnel and procedures ensuring fire extinguisher were present at the job site. The appropriate emergency numbers were present on site to contact the fire department.

7.0 Contractor Quality Control Summary

In February 1991, the USACE placed IT under contract to perform the ordnance location and removal action at Former Raritan Arsenal in Edison, New Jersey. The contract included ordnance location, removal, and disposal at suspected Areas within the Former Raritan Arsenal. The project grew to include 17 different areas.

The first several months were utilized preparing the required submittals (i.e. work plans, equipment and material information, etc.), project scheduling, ordering materials and equipment and other activity essential prior to mobilization. The preliminary site survey was conducted by Sailor and Sailor Associates to provide the required field references to complete the project.

IT subcontracted EOD Technology Inc. (EODT) to perform the actual field ordnance searching, removal, and detonation operation. During the project, a fence was installed at Building 118 site in Middlesex County College to protect the public. Also, two IT office Trailers, a USACE office trailer, four site trailers, a shower/locker trailer, and a personnel decontamination pad complete with utilities were installed during the project. Power was supplied to the site, and regular/or portable phones and radio communication were equipped to all trailers. Building Security Services, Middlesex County College Campus Police and Edison Park Police coordinated to monitor the sites during all nonworking hours over the entire length of the project.

Work began on each area by laying out sweep lanes and locating any obvious "hot" areas. Clearing and grubbing operations were conducted to some areas with heavy vegetation. Magnetometers (metal detector) were used to detect the ordnance. The detection limit was approximately 10-12 feet. All surface munitions and munitions to one foot deep were removed by shovel. Munitions deeper than one foot were excavated utilizing loader/backhoe to within one foot of the vicinity of any suspected UXO and then proceeded by hand digging. All the areas were cleared down to the point as the groundwater permitted or to a depth of six feet unless otherwise directed by the USACE. At areas like Area 16 and Area 4, large pockets of UXO's were found. The RD-40 Screen-All was utilized. It was approved that the munitions and/or TNT bulk explosives were compatible with this type of screening operation. The entire areas were cleared of munitions and explosives in a logical sequence that was determined on-site and all excavated, examined soils were backfilled after the area was identified ordnance free.

At the completion of each site, EODT QC personnel and USACE QA officer conducted quality control examinations. To introduce a new time saving ordnance searching methods, an USRADS crew was mobilized to perform the ordnance searching at part of Area 17 and part of Area 10 by using computerized equipment combined with magnetometer. This method provided fast-speed, graphic displayed, way to do the ordnance searching and/or QA/QC.

During the QA/QC, one 37 mm projectile was found at Area 16 and 487 adapter booster were uncovered at Building 118 site in Middlesex County College.

IT maintained responsibility of overseeing subcontractor compliance with applicable quality control elements. The quality control system utilized during the project provided an organized procedure that complies with the specification to monitor the site operation through a series of health and safety tailgate checking, site auditing, daily field activities records, ordnance accountability log maintenance, and air monitoring at applicable site, i.e. - Area 4.

Results of quality assurance inspections were reported on daily Quality Control Inspection Report written by the IT field engineer and submitted to the USACE. This report also provided a day-by-day diary of project activities and included the following information:

- Weather Conditions
- Phases of Operation in Progress
- Material and/or Equipment Delivery and Demobilization
- Inspections
- Testing Information
- Verbal Instructions Received
- Changed Conditions/Delays /Conflicts Encountered
- Remarks.

8.0 Problems Associated with Project Quality Control

- Groundwater entering the excavation hole at Area 16 and Area 4 slowed down the normal operation. Water pumps were used to pump the water out from the excavation hole;
- Rain, Snow, and iced ground created poor site conditions and delayed the operation.
- Power lines were damaged during the excavation at Building 118 site in Middlesex County College due to unclear utilities information at the area provided by the College.
- Noise monitoring at Demo Site was not satisfied, and several complaints from Sayerville Residents were received through township and police department.
- Ordnance removal operation was delayed due to discovery and removal of two USTs at Building 118 site in Middlesex County College. Also telephone and power line conduit blocked the way of ordnance clearing at the area which caused slowing down the normal operation.

9.0 Lessons Learned

9.1 Delivery Order Issuance

The start of every Delivery Order was implemented by utilizing a DD 1155. There was some warning that an order was on the way. Once the order was received with the USACE's estimate, a site walk was conducted, a video taken, and work plans commenced. In the beginning, IT Corporation provided a "BIDIT" estimate of the work requested, our input was denied. The contractor needs to perform an estimate prior to initializing work activities on a Delivery Order. His presentation of the estimate should be reviewed, revised, and approved so all parties participating have a gauge to measure against.

9.2 Section 3.2.4 of the Contract

3.2.4.1.1 Requires the Contractor to provide the necessary UXO personnel and equipment to complete the work. Their qualifications were presented in later paragraphs of the section.

IT is understood that UXO specialists are necessary to handle and identify Ordnance related items, but operator and laborer work should be conducted by those types of individuals.

There is a shortage of UXO personnel. Of those that work at Raritan most were all retired Military and senior type personnel. The lower levels could not be obtained, thereby substantially increasing the cost. Operator and laborer levels were not utilized because it was believed by the parties involved that unless an individual was UXO trained, no entry was permitted into and exclusion zone where operations were ongoing. This did not have to be the case at Raritan, particularly in Area 4 where the primary work was excavating for TNT. During the removal of the concrete driveway, an experienced IT operator was brought in to operate the hoeram and this proved to work very well.

A recommendation to incorporate into a contract is that non-UXO personnel who will be entering an exclusion zone where UXO operations are being performed, be given a safety training course prior to the start of work. This course should be designed by a UXO person and should be at least 8 hours but no more than 16 hours.

9.3 Multiple Delivery Orders at One Location

At Raritan, 4 Delivery Orders were issued to perform work at 18 sites including the detonation area. Modification to the original Delivery Order would have been more appropriate to facilitate project controls. The Delivery Orders increased the volume of accounting purchasing, invoicing, and management required to report the projects.

9.4 Contract Work Statement Requirements

As with all government procurements, there are many governing regulations. The Statements of Work Clauses, or special clauses define specific requirements for the work to be performed. On the Huntsville East Contract, many of the standards were incorporated because of so many possibilities and restrictions. These items may have included the following:

- Work and Data Management Plan
- Geo Technical Sub-Plan
- Obtaining Miles National Crime Information of all employees working on site
- Environmental Report (3.2.3)
- Etc.

A Total Quality Management Plan should be developed for contracts of this nature. Start with a Quality Program Plan which incorporates, the General Contract Quality Plan, the Health & Safety Plan, the Sampling and Analysis Plan and Remediation Quality Plan. Each individual Delivery Order should build the site-specific plans based on the Quality Program Plan (QPP). A matrix of requirements should be incorporated in the QPP. For each Delivery Order, the matrix should be checked off and agreed to for site-specific reporting requirements and these actions implemented.

9.5 Security

Providing security at the former Raritan Arsenal was one of the most costly activities encountered. The different security agencies involved:

- Middlesex County Park Police
- Edison Police
- Middlesex County College Police
- Building Security Systems

During operations, security guard services seemed to paramount. In this case, too many agencies wanted to "Protect their turf", at significant cost (i.e., Police at \$25.00 per hour vs. a service at \$14.00 per hour).

For the Raritan Project, a single security service must be contracted to provide and coordinate security in a cost effective manner. The government must approach the local agencies or the local political system and work out this agreement.

9.6 Partnering

Partnering is one important factor that needs to be implemented between the Government and Contractor. By creating an atmosphere of team spirit, the desired results are toward an objective path.

TABLE 1
AREA 10
ORDNANCE RECOVERY AND DISPOSAL LOG
FORMER RARITAN ARSENAL

DATE	FRENCH RIFLE GRENADE RECOVERY	TOTAL TO-DATE	FRENCH RIFLE GRENADE DESTROYED	DESTROYED TO-DATE
10/18/91	1	1	0	0
10/21/91	1	2	0	0
11/05/91	1	3	0	0
11/07/91	0	3	3	3
11/21/91	1	4	0	3
11/22/91	1	5	0	3
11/27/91	1	6	0	3
12/04/91	1	7	0	3
12/05/91	0	7	4	7
12/12/91	1	8	0	7
12/19/91	0	8	1	8
02/19/92	1	9	0	8
02/21/92	1	10	0	8
02/25/92	1	11	0	8
03/03/92	1	12	0	8
03/06/92	0	12	4	12
03/17/92	1	13	0	12
03/20/92	0	13	1	13

*10/17/91 - 1 MK23 3 lb. practice bomb destroyed on 11/7/91.

**Several grenade fuzes were uncovered, but did not count in the log.

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG - TNT
FORMER RARITAN ARSENAL

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
11/07/91	24.5	24.5	0	0
11/08/91				
11/09/91				
11/10/91				
11/11/91				
11/12/91	11.0	35.5	0	0
11/13/91	16.0	51.5	0	0
11/14/91	11.5	63	0	0
11/15/91	18.5	81.5	63.0	63.0
11/16/91				
11/17/91				
11/18/91	91	172.5	18.5	81.5
11/19/91	86.5	259.0	0	81.5
11/20/91	100.0	359.0	0	81.5
11/21/91	139.0	498.0	0	81.5
11/22/91	100.0	598.0	102.0	183.5
11/23/91				
11/24/91				
11/25/91	112.0	710.0	91.0	274.5
11/26/91	150.0	860.0	200.0	474.5
11/27/91	100.0	960.0	485.5	960.0

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG
FORMER RARITAN ARSENAL
(continued)

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
11/28/91				
11/30/91				
12/01/91				
12/02/91				
12/03/91	69.0	1029.0	0	960.0
12/04/91	100.0	1129.0	0	960.0
12/05/91	30.0	1159.0	0	960.0
12/06/91	20.0	1179.0	199.0	1159.0
12/07/91				
12/08/91				
12/09/91	77.0	1256.0	20.0	1179.0
12/10/91	90.0	1346.0	77.0	1256.0
12/11/91	70.0	1416.0	0	1256.0
12/12/91	10.0	1426.0	170.0	1426.0
12/13/91				
12/14/91				
12/15/91				
12/16/91	0	1426.0	0	1426.0
12/17/91	0	1426.0	0	1426.0
12/18/91	80.0	1506.0	0	1426.0

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG
FORMER RARITAN ARSENAL
(continued)

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
12/19/91	38.0	1544.0	118	1544.0
12/20/91 - 01/06/92	Holidays			
01/07/92				
01/08/92	0	1544.0	0	1544.0
01/09/92	102.5	1646.0	0	1544.0
01/10/92	186.5	1833.0	0	1544.0
01/11/92				
01/12/92				
01/13/92				
01/14/92	302.0	2135.0	0	1544.0
01/15/92	467.0	2602.0	0	1544.0
01/16/92	0	2602.0	0	1544.0
01/17/92	125.0	2727.0	978.0	2522.0
01/18/92				
01/20/92				
01/21/92	222.0	2949.0	0	2522.0
01/22/92	385.0	3334.0	0	2522.0
01/23/92	204.0	3538.0	0	2522.0
01/24/92	220.0	3758.0	0	2522.0

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG
FORMER RARITAN ARSENAL
(continued)

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
01/25/92				
01/26/92				
01/27/92	175.0	3933.0	0	2522.0
01/28/92	240.0	4173.0	0	2522.0
01/29/92	240.0	4413.0	0	2522.0
01/30/92	180.0	4593.0	1145.0	3667.0
01/31/92				
02/01/92				
02/02/92				
02/03/92				
02/04/92	220.0	4813.0	0	3667.0
02/05/92	236.0	5049.0	0	3667.0
02/06/92	360.0	5409.0	0	3667.0
02/07/92	360.0	5769.0	1436.0	5103.0
02/08/92				
02/09/92				
02/10/92				
02/11/92	180.0	5949.0	0	5103.0
02/12/92	240.0	6189.0	0	5103.0
02/13/92	240.0	6429.0	0	5103.0

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG
FORMER RARITAN ARSENAL
(continued)

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
02/14/92	360.0	6789.0	0	5103.0
02/15/92				
02/16/92				
02/17/92				
02/18/92	240.0	7029.0	0	5103.0
02/19/92	300.0	7329.0	0	5103.0
02/20/92	240.0	7569.0	0	5103.0
02/21/92	160.0	7729.0	2626	7729.0
02/22/92				
02/23/92				
02/24/92	240.0	7969.0	0	7729.0
02/25/92	240.0	8209.0	0	7729.0
02/26/92	240.0	8449.0	0	7729.0
02/27/92	1282.0	9731.0	2002.0	9731.0
02/28/92				
02/29/92				
03/01/92				
03/02/92				
03/03/92	360.0	10,091.0	0	9731.0
03/04/92	360.0	10,451.0	0	9731.0

TABLE 2
AREA 4
ORDNANCE & EXPLOSIVES LOG
FORMER RARITAN ARSENAL
(continued)

DATE	TNT RECOVERED (LB)	TNT TO-DATE (LB)	TNT DESTROYED (LB)	TNT DESTROYED TO-DATE (LB)
03/05/92	360.0	10,811.0	0	9731.0
03/06/92	480.0	11,291.0	1560.0	11,291.0
03/07/92				
03/08/92				
03/09/92				
03/10/92	300.0	11591.0	0	11291.0
03/11/92	140.0	11731.0	0	11291.0
03/12/92	0	11731.0	0	11291.0
03/13/92	0	11731.0		11291.0
03/14/92				
03/15/92				
03/16/92				
03/17/92	18.0	11749.0	0	11291.0
03/18/92	360.0	12109.0	0	11291.0
03/19/92	71.0	12180.0	0	11291.0
03/20/92	180.0	12360.0	1069.0	12360.0

TABLE 3
AREA 4
ORDNANCE & EXPLOSIVES LOG - ORDNANCE
FORMER RARITAN ARSENAL

DATE	ITEM RECOVERED	DATE DESTROYED	TOTAL NUMBER
11/06/91	20lb bomb uncovered	11/14	1
11/14/91	1 75mm proj. uncovered	12/05	1
11/18/91	1 projectile fuze uncovered	03/06/92	1
12/10/91	1 155mm projectile	12/12	1
12/11/91	1 75 mm projectile 4 projectile adapter boosters	12/11 12/11	2 4
12/12/91	1 projectile adapter boosters	12/12	5
12/16/91	1 9.2-inch projectile	12/19	1
12/18/91	1 75mm projectile	12/19	3
01/15/92	3 75mm projectile	03/06	6
02/14/92	1 projectile adapter booster	03/06	6
02/18/92	1 projectile fuze	03/06	2
02/20/92	13 75 mm projectile 3 booster cups 1 projectile fuze	03/06 03/06 03/06	19 3 3
03/06/92	1 projectile adapter booster	03/06	7
03/17/92	2 75 mm projectile 2 projectile adapter boosters	03/20 03/20	21 9

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
06/27/91	712	712	0	0
06/28/91	0	712	0	0
06/29/91	0	712	0	0
06/30/91	0	712	0	0
07/01/91	654	1366	0	0
07/02/91	678	2044	0	0
07/03/91	189	2233	0	0
07/04/91	0	2233	0	0
07/05/91	483	2716	0	0
07/06/91	0	2716	0	0
07/07/91	0	2716	0	0
07/08/91	1130	3846	0	0
07/09/91	135	3981	0	0
07/10/91	870	4851	0	0
07/11/91	1218	6069	0	0
07/12/91	0	6069	0	0
07/13/91	0	6069	0	0
07/14/91	0	6069	0	0
07/15/91	0	6069	0	0
07/16/91	1220	7289	50	50
07/17/91	432	7721	350	400

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
07/18/91	0	7721	1000	1400
07/19/91	1000	8721	479	1879
07/20/91	0	8721	0	1879
07/21/91	0	8721	0	1879
07/22/91	1578	10299	1000	2879
07/23/91	1309	11608	1750	4629
07/24/91	931	12539	1425	6054
07/25/91	1097	13636	768	6822
07/26/91	0	13636	0	6822
07/27/91	0	13636	0	6822
07/28/91	0	13636	0	6822
07/29/91	0	13636	0	6822
07/30/91	217	13853	0	6822
07/31/91	336	14189	0	6822
08/01/91	1336	15525	1712	8534
08/02/91	1162	16687	2250	10784
08/03/91	0	16687	0	10784
08/04/91	0	16687	0	10784
08/05/91	395	17082	1500	12284
08/06/91	917	17999	450	12734

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
08/07/91	267	18266	2115	14849
08/08/91	1204	19470	2265	17114
08/09/91	0	19470	0	17114
08/10/91	0	19470	0	17114
08/11/91	0	19470	0	17114
08/12/91	0	19470	0	17114
08/13/91	632	20102	0	17114
08/14/91	148	20250	0	17114
08/15/91	582	20832	0	17114
08/16/91	1804	22636	0	17114
08/17/91	0	22636	0	17114
08/18/91	0	22636	0	17114
08/19/91	326	22962	0	17114
08/20/91	135	23097	0	17114
08/21/91	271	23368	0	17114
08/22/91	729	24097	0	17114
08/23/91	0	24097	0	17114
08/24/91	0	24097	0	17114
08/25/91	0	24097	0	17114
08/26/91	0	24097	0	17114

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
08/27/91	222	24319	0	17114
08/28/91	949	25268	0	17114
08/29/91	527	25795	949	18063
08/30/91	1082	26877	2250	20313
08/31/91	0	26877	0	20313
09/01/91	0	26877	0	20313
09/02/91	0	26877	0	20313
09/03/91	681	27558	0	20313
09/04/91	1008	28566	0	20313
09/05/91	421	28987	0	20313
09/06/91	0	28987	0	20313
09/07/91	0	28987	0	20313
09/08/91	0	28987	0	20313
09/09/91	210	29197	0	20313
09/10/91	619	29816	0	20313
09/11/91	225	30041	631	20944
09/12/91	1369	31410	0	20944
09/13/91	0	31410	0	20944
09/14/91	0	31410	0	20944
09/15/91	0	31410	0	20944

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
09/16/91	0	31410	0	20944
09/17/91	1267	32677	1391	22335
09/18/91	1074	33751	1502	23837
09/19/91	1369	35120	1500	25337
09/20/91	1290	36410	1515	26852
09/21/91	0	36410	0	26852
09/22/91	0	36410	0	26852
09/23/91	73	36483	1533	28385
09/24/91	11	36494	1500	29885
09/25/91	0	36494	707	30592
09/26/91	8	36502	1536	32128
09/27/91	0	36502	0	32128
09/28/91	0	36502	0	32128
09/29/91	0	36502	0	32128
09/30/91	0	36502	0	32128
10/01/91	0	36502	471	32599
10/02/91	101	36603	0	32599
10/03/91	0	36603	0	32599
10/04/91	131	36734	0	32599
10/05/91	0	36734	0	32599

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
10/06/91	0	36734	0	32599
10/07/91	149	36883	0	32599
10/08/91	220	37103	0	32599
10/09/91	609	37712	0	32599
10/10/91	1370	39082	0	32599
10/11/91	0	39082	0	32599
10/12/91	0	39082	0	32599
10/13/91	0	39082	0	32599
10/14/91	0	39082	0	32599
10/15/91	1140	40222	0	32599
10/16/91	1369	41591	800	33399
10/17/91	2001	43592	840	34239
10/18/91	2650	46242	3000	37239
10/19/91	0	46242	0	37239
10/20/91	0	46242	0	37239
10/21/91	2654	48896	3000	40239
10/22/91	1400	50296	2030	42269
10/23/91	1403	51699	1925	44194
10/24/91	302	52001	2093	46287
10/25/91	0	52001	0	46287

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
10/26/91	0	52001	0	46287
10/27/91	0	52001	0	46287
10/28/91	0	52001	0	46287
10/29/91	1597	53598	2044	48331
10/30/91	2506	56104	1000	49331
10/31/91	1313	57417	0	49331
11/01/91	1278	58695	1000	50331
11/02/91	0		0	50331
11/03/91	0		0	50331
11/04/91	1305	60000	1000	51331
11/05/91	3000	63000	2055	53386
11/06/91	3144	66144	2006	55392
11/07/91	2856	69000	1530	56911
11/08/91	0		0	
11/09/91	0		0	
11/10/91	0		0	
11/11/91	0		0	
11/12/91	1240	70240	1356	58278
11/13/91	1343	71583	2000	60278
11/14/91	2001	73584	1223	61501

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
11/15/91	2022	75606	0	
11/16/91	0		0	
11/17/91	0		0	
11/18/91	1011	76617	0	
11/19/91	841	77458	3010	64511
11/20/91	555	78013	3000	67511
11/21/91	1131	79144	2945	70456
11/22/91	867	80011	0	
11/23/91	0		0	
11/24/91	0		0	
11/25/91	792	80803	950	71,406
11/26/91	101	80904	0	
11/27/91	117	81021	25	71,431
11/28/91	0		0	
11/29/91	0		0	
11/30/91	0		0	
12/01/91	0		0	
12/02/91	0		0	
12/03/91	0	81021	0	
12/04/91	0	81021	1400	72,831

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
12/05/91	0	81021	1000	73,831
12/06/91	0	81021	1002	74,833
12/07/91	0		0	
12/08/91	0		0	
12/09/91	135	81156	1000	75,833
12/10/91	184	81340	1534	77,367
12/11/91	99	81439	1000	78,367
12/12/91	0	81439	555	78,922
12/13/91	0		0	
12/14/91	0		0	
12/15/91	0		0	
12/16/91	0	81439	1000	79,922
12/17/91	0	81439	1000	80,922
12/18/91	0	81439	517	81,439
12/19/91	23	81402	23	81,462
12/20/91	0		0	
12/21/91	0		0	
12/22/91	0		0	
12/23/91	0		0	
12/24/91	0		0	

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
12/25/91	0		0	
12/26/91	0		0	
12/27/91	0		0	
12/28/91	0		0	
12/29/91	0		0	
12/30/91	0		0	
12/31/91	0		0	
01/08/92	372	81834	0	81,462
01/09/92	33	81867	0	81,462
01/10/92	103	81970	0	81,462
01/11/92				81,462
01/12/92				81,462
01/13/92				81,462
01/14/92	40	82,010	0	81,462
01/15/92	50	82,060	0	81,462
01/16/92	0	82,060	0	81,462
01/17/92	0	82,060	0	81,462
01/18/92				81,462
01/19/92				81,462
01/20/92				81,462

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
01/21/92	5	82,065	0	81,462
01/22/92	4	82,069	0	81,462
01/23/92	12	82,081	0	81,462
01/24/92	0	82,081	0	81,462
01/25/92				81,462
01/26/92				81,462
01/27/92	5	82,086	0	81,462
01/28/92	22	82,108	0	81,462
01/29/92	0	82,108	0	81,462
01/30/92	0	82,108	0	81,462
01/31/92				81,462
02/01/92				81,462
02/02/92				81,462
02/03/92				81,462
02/04/92	29	82,137	0	81,462
02/05/92	69	82,206	0	81,462
02/06/92	0	82,206	0	81,462
02/07/92	0	82,206	744	82,206
02/08/92				
02/09/92				

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
02/10/92				
02/11/92	132	82,338	0	
02/12/92	87	82,425	0	
02/13/92	266	82,691	0	
02/14/92	18	82,709	0	82,206
02/15/92				
02/16/92				
02/17/92				
02/18/92	112	82,831	0	
02/19/92	10	82,831	0	
02/20/92	0	82,831	0	
02/21/92	0	82,831	0	
02/22/92				
02/23/92				
02/24/92	16	82,847	0	
02/25/92	13	82,860	0	
02/26/92	0	82,860	0	
02/27/92	0	82,860	654	82,860
02/28/92				
02/29/92				

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
03/01/92				
03/02/92				
03/03/92	4	82,864	0	
03/04/92	0	82,864	0	
03/05/92	8	82,872	0	
03/06/92	0	82,872	12	82,872
03/07/92				
03/08/92				
03/09/92				
03/10/92	0	82,872	0	
03/11/92	13	82,885	0	
03/12/92	0	82,885	0	
03/13/92	0	82,885	0	82,872
03/14/92				
03/15/92				
03/16/92				
03/17/92	0	82,885	0	
03/18/92	0	82,885	0	
03/19/92	231	83,116	0	
03/20/92	0	83,116	244	83,116

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
03/21/92				
03/22/92				
03/23/92				
03/24/92				
03/25/92				
03/26/92	3	83,119	0	83,116
03/27/92				
03/28/92				
03/29/92				
03/30/92	0	83,119	0	
03/31/92	5	83,124	0	
04/01/92	18	83,124	0	
04/02/92	0	83,124	0	
04/03/92	40	83,182	0	83,116
04/04/92				
04/05/92				
04/06/92	138	83,320	0	
04/07/92	26	83,346	0	
04/08/92	2	83,348	0	
04/09/92	2	83,350	0	

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

DATE	MK II/III BOOSTER ADAPTERS			
	Bldg. 118		Date Destroyed	Total Destroyed To-Date
	Recovered	Total To-Date		
04/10/92	0	83,350	0	83,116
04/11/92				
04/12/92				
04/13/92	2	83,352	0	
04/14/92	0	83,352	0	
04/15/92	0	83,352	0	83,116
04/16/92	0	83,352	270	83,386
04/17/92	15	83,401	0	
04/18/92				
04/19/92				
04/20/92	235	83,636	0	
04/21/92	180	83,816	0	
04/22/92	27	83,843	0	
04/23/92	17	83,860	0	
04/24/92	10	83,870	0	83,386
04/25/92				
04/26/92				
04/27/92	3	83,873	0	83,386

*On 3/18/92, 1 MKII grande was found at Building 118 site.

TABLE 4
BUILDING 118
DEMOLITION & ORDNANCE LOG
FORMER RARITAN ARSENAL
(continued)

Note: There are 487 adapter boosters in storage which were uncovered during the QA/QC from 4/17-4/27.

**TABLE 5
OTHER AREAS
FORMER RARITAN ARSENAL ORDNANCE LOG**

Area 3

3/10/92 39 MKII grenade fuzes
 1 Stokes mortar
 3 3.5 inch rocket fuzes
 5 misc. fuze components
 1 MIII projectile fuze

Destroyed 3/20/92

Area 11

3/13/92 54 French rifle grenades
 9 MKII grenades
 8 20mm rounds
 1 projectile (75mm RR)

Destroyed 3/20/92

Area 2

(No date available from EODT site walk)

1 fuze, PD M52 - destroyed 3/20/92

Wastepile (between Edison Park and College)

3 37mm cartridge case
1 40mm cartridge case

ORDNANCE LOG FOR FORMER RARITAN ARSENAL PROJECT

DATE	37-MM PROJECTILES						
	Bldg. 643		Bldg. 644		Total Recovered	Destroyed On the day	Total destroyed To-date
	Recovered	Total to-date	Recovered	Total to-date			
05/13/91	289	289	0	0	289	0	0
05/14/91	907	1196	0	0	1196	0	0
05/15/91	602	1798	0	0	1798	0	0
05/16/91	2188	3986	0	0	3986	1200	1200
05/17/91	0	3986	0	0	3986	1000	2200
05/18/91	0	3986	0	0	3986	0	2200
05/19/91	0	3986	0	0	3986	0	2200
05/20/91	1047	5033	0	0	5033	1250	3450
05/21/91	1152	6185	0	0	6185	0	3450
05/22/91	803	6988	0	0	6988	1200	4650
05/23/91	513	7501	0	0	7501	0	4650
05/24/91	0	7501	0	0	7501	0	4650
05/25/91	0	7501	0	0	7501	0	4650
05/26/91	0	7501	0	0	7501	0	4650
05/27/91	0	7501	0	0	7501	0	4650
05/28/91	232	7733	0	0	7733	0	4650
05/29/91	3212	10945	0	0	10945	0	4650
05/30/91	1730	12675	0	0	12675	0	4650
05/31/91	1707	14382	0	0	14382	0	4650
06/01/91	0	14382	0	0	14382	0	4650
06/02/91	0	14382	0	0	14382	0	4650
06/03/91	2226	16608	0	0	16608	0	4650
06/04/91	0	16608	0	0	16608	0	4650
06/05/91	0	16608	0	0	16608	0	4650
06/06/91	2426	19034	0	0	19034	0	4650

TABLE 6



ENVIRONMENTAL TESTING
AND CERTIFICATION CORP.

Inorganics Technical Report
for

IT CORP
P.O. BOX 5902
RARITAN CENTER
EDISON, NJ 08837

Chain of Custody Data Required for ETC Data Management Summary Reports

CB0330-CB0331

IT CORP

ITCENJTNT

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
----------------	---------	----------	--------------	------	------	---------------

Richard P. Albert
Vice President, General Manager

File # 001067

This Technical Report is an INSITE™ service generated by LODESTAR™ Data Management Software.

ETC CORP. TECHNICAL REPORT

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Laboratory Blank

GC/MS Sample Data

Total Ion Chromatogram
Quantitation Report
Mass Spectral Data
TIC Mass Spectral Data

GC Quality Control Data

Calibration Summary
Laboratory Blank

GC Sample Data

Chromatogram
Quantitation Report
Confirmation Data if required

Chain of Custody Documentation

INTRODUCTION

**Environmental Testing and Certification Corp.
284 Raritan Center Parkway, CN 7808
Edison, New Jersey 08818-7808
(908) 225-6700**

This technical report contains analytical results in tabular format. It includes comprehensive data for the analytical processes performed. Unless specified otherwise, all soil and sediment results are reported on a dry weight basis.

The report deliverables included in this technical report are based upon the level of report deliverable requested and the applicable quality assurance protocols in the methodologies performed. The sections listed in the Table of Contents represent the full, standard package for organic and inorganic analyses; the report deliverables for this package may vary according to the actual analyses performed.

The ETC/Edison laboratory utilizes a wide variety of methodologies and USEPA approved procedures. Analytical processes and quality assurance protocols are based upon the following references.

Analytical References - Methods and Procedures

Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater", Federal Register Vol. 49, No. 209, October 26, 1984;

"Test Methods for Evaluating Solid Waste", SW-846 Third Edition, USEPA, September 1986;

"Standard Methods for the Examination of Water and Wastewater", 14th, 15th and 16th Edition, 1985;

"Methods for Chemical Analysis of Water and Wastes", EPA 600/4-79-020, EMSL, March 1983;

USEPA Organic Contract Laboratory Program SOW, February 1988;

USEPA Inorganic Contract Laboratory Program SOW, July 1987;

USEPA 2,3,7,8-TCDD Solicitation WA86-K357 SOW, September 1986;

"Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88/039, December 1988;

"Handbook for Analytical Quality Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March 1979; and

"National Enforcement Investigation Center Policies and Procedures Manual", EPA-330/9/78/001-R, Revised May 1986.

ETC

The ETC Corp., Edison NJ laboratory is certified to perform environmental analyses for samples collected throughout the United States of America. The laboratory certification identification numbers are summarized below should a certification reference be required in the technical report.

Certification Summary - March 2, 1992

<u>State Agency</u>	<u>Certification Number</u>
Arizona Department of Environmental Quality	322
California Department of Health Services	I-1005
Connecticut Department of Health Services	0511
Illinois Environmental Protection Agency	100224
Kansas Department of Health and Environment	E148, E1122
Massachusetts Department of Environmental Protection	NJ136
New Hampshire Department of Environmental Services	202690-A
New Jersey Department of Environmental Protection	12941
New York Department of Public Health	10586
North Carolina Department of the Environment	326
Oklahoma Water Resources Board	8703
Pennsylvania Department of Environmental Resources	68-323
South Carolina Department of Health and Environmental Control	94002
Tennessee Department of Health and Environment	02915
Utah Department of Health	E-91
Virginia Department of General Services	00113
Wisconsin Department of Natural Resources	999464070

06/07/91	0	19034	0	0	19034	0	4650
06/08/91	0	19034	0	0	19034	0	4650
06/09/91	0	19034	0	0	19034	0	4650
06/10/91	741	19775	0	0	19775	0	4650
06/11/91	686	20461	0	0	20461	0	4650
06/12/91	806	21267	0	0	21267	275	4925
06/13/91	475	21742	0	0	21742	1600	6525
06/14/91	0	21742	0	0	21742	0	6525
06/15/91	0	21742	0	0	21742	0	6525
06/16/91	0	21742	0	0	21742	0	6525
06/17/91	0	21742	0	0	21742	0	6525
06/18/91	234	21976	0	0	21976	120	6645
06/19/91	82	22058	0	0	22058	480	7125
06/20/91	140	22198	0	0	22198	0	7125
06/21/91	209	22407	0	0	22407	960	8085
06/22/91	0	22407	0	0	22407	0	8085
06/23/91	0	22407	0	0	22407	0	8085
06/24/91	435	22842	0	0	22842	0	8085
06/25/91	468	23310	0	0	23310	0	8085
06/26/91	210	23520	0	0	23520	280	8365
06/27/91	364	23884	0	0	23884	720	9085
06/28/91	0	23884	0	0	23884	0	9085
06/29/91	0	23884	0	0	23884	0	9085
06/30/91	0	23884	0	0	23884	0	9085
07/01/91	275	24159	0	0	24159	0	9085
07/02/91	1709	25868	0	0	25868	0	9085
07/03/91	77	25945	0	0	25945	0	9085
07/04/91	0	25945	0	0	25945	0	9085
07/05/91	304	26249	0	0	26249	0	9085

TABLE 6
(Continued)

TABLE 6
(Continued)

07/06/91	0	26249	0	0	26249	0	9085
07/07/91	0	26249	0	0	26249	0	9085
07/08/91	152	26401	0	0	26401	0	9085
07/09/91	1679	28080	0	0	28080	0	9085
07/10/91	299	28379	0	0	28379	0	9085
07/11/91	599	28978	0	0	28978	0	9085
07/12/91	0	28978	0	0	28978	0	9085
07/13/91	0	28978	0	0	28978	0	9085
07/14/91	0	28978	0	0	28978	0	9085
07/15/91	0	28978	0	0	28978	0	9085
07/16/91	87	29065	0	0	29065	0	9085
07/17/91	80	29145	0	0	29145	0	9085
07/18/91	33	29178	0	0	29178	0	9085
07/19/91	8	29186	0	0	29186	0	9085
07/20/91	0	29186	0	0	29186	0	9085
07/21/91	0	29186	0	0	29186	0	9085
07/22/91	8	29194	0	0	29194	0	9085
07/23/91	0	29194	366	366	29560	0	9085
07/24/91	0	29194	76	442	29636	0	9085
07/25/91	0	29194	17	459	29653	30	9115
07/26/91	0	29194	0	459	29653	0	9115
07/27/91	0	29194	0	459	29653	0	9115
07/28/91	0	29194	0	459	29653	0	9115
07/29/91	0	29194	0	459	29653	0	9115
07/30/91	0	29194	8	467	29661	200	9315
07/31/91	0	29194	20	487	29681	502	9817
08/01/91	0	29194	49	536	29730	0	9817
08/02/91	0	29194	62	598	29792	0	9817
08/03/91	0	29194	0	598	29792	0	9817

* This is the
last day worked
at Bldg 643.

08/04/91	0	29194	0	598	29792	0	9817
08/05/91	0	29194	32	630	29824	0	9817
08/06/91	0	29194	11	641	29835	0	9817
08/07/91	0	29194	16	657	29851	0	9817
08/08/91	0	29194	2	659	29853	0	9817
08/09/91	0	29194	0	659	29853	0	9817
08/10/91	0	29194	0	659	29853	0	9817
08/11/91	0	29194	0	659	29853	0	9817
08/12/91	0	29194	0	659	29853	0	9817
08/13/91	0	29194	39	698	29892	690	10507
08/14/91	0	29194	18	716	29910	651	11158
08/15/91	0	29194	10	726	29920	877	12035
08/16/91	0	29194	9	735	29929	1170	13205
08/17/91	0	29194	0	735	29929	0	13205
08/18/91	0	29194	0	735	29929	0	13205
08/19/91	0	29194	3	738	29932	375	13580
08/20/91	0	29194	35	773	29967	468	14048
08/21/91	0	29194	12	785	29979	1000	15048
08/22/91	0	29194	0	785	29979	800	15848
08/23/91	0	29194	0	785	29979	0	15848
08/24/91	0	29194	0	785	29979	0	15848
08/25/91	0	29194	0	785	29979	0	15848
08/26/91	0	29194	0	785	29979	0	15848
08/27/91	0	29194	2	787	29981	900	16748
08/28/91	0	29194	1	788	29982	569	17317
08/29/91	0	29194	0	788	29982	210	17527
08/30/91	0	29194	22	810	30004	0	17527
08/31/91	0	29194	0	810	30004	0	17527
09/01/91	0	29194	0	810	30004	0	17527

TABLE 6
(Continued)

TABLE 6
(Continued)

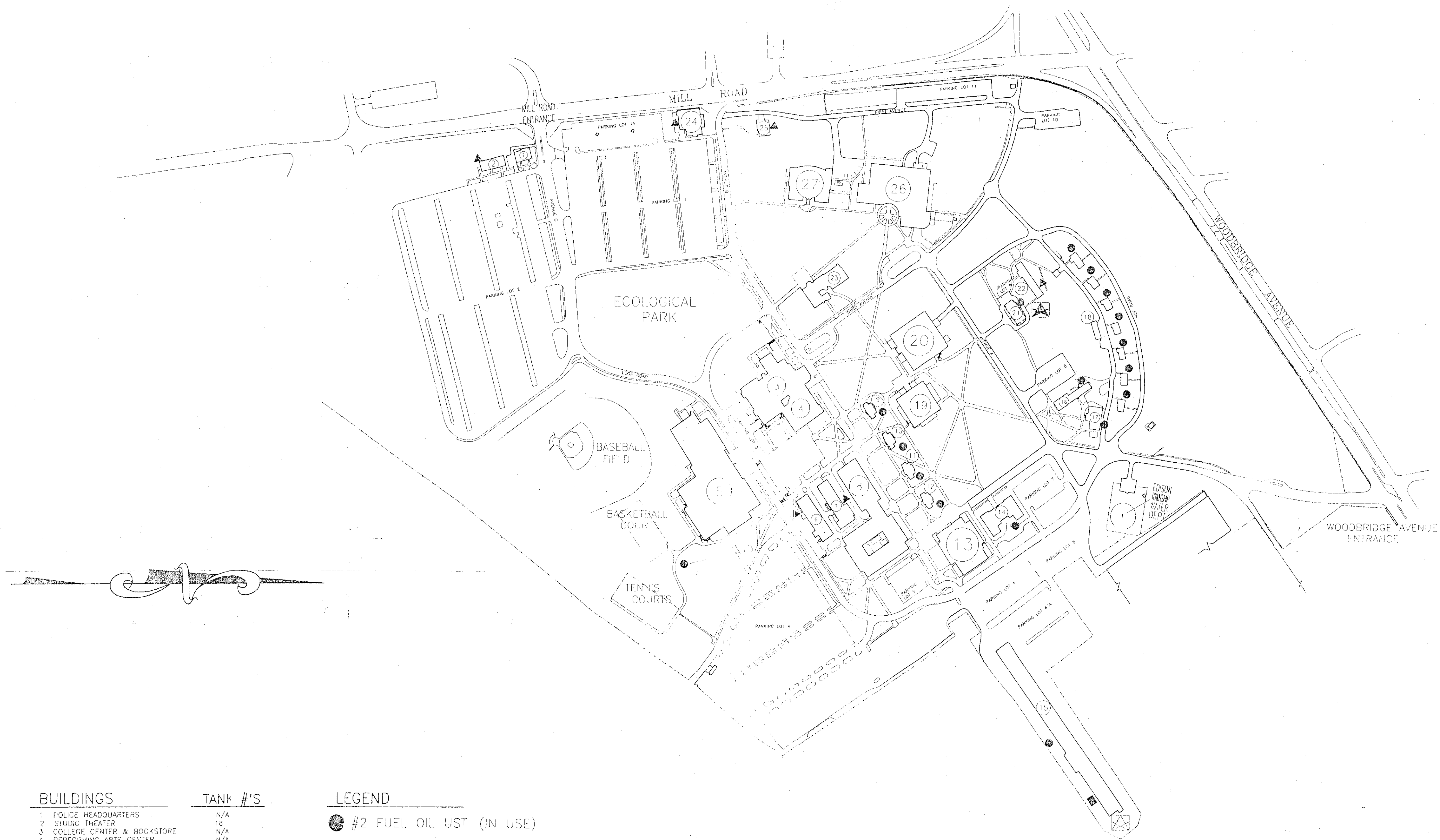
09/02/91	0	29194	0	810	30004	0	17527
09/03/91	0	29194	4	814	30008	0	17527
09/04/91	0	29194	19	833	30027	1205	18732
09/05/91	0	29194	12	845	30039	402	19134
09/06/91	0	29194	7	852	30046	1003	20137
09/07/91	0	29194	0	852	30046	0	20137
09/08/91	0	29194	0	852	30046	0	20137
09/09/91	0	29194	15	867	30061	1008	21145
09/10/91	0	29194	21	888	30082	917	22062
09/11/91	0	29194	7	895	30089	225	22287
09/12/91	0	29194	12	907	30101	641	22928
09/13/91	0	29194	0	907	30101	0	22928
09/14/91	0	29194	0	907	30101	0	22928
09/15/91	0	29194	0	907	30101	0	22928
09/16/91	0	29194	0	907	30101	0	22928
09/17/91	0	29194	20	927	30121	0	22928
09/18/91	0	29194	11	938	30132	0	22928
09/19/91	0	29194	8	946	30140	0	22928
09/20/91	0	29194	3	949	30143	0	22928
09/21/91	0	29194	0	949	30143	0	22928
09/22/91	0	29194	0	949	30143	0	22928
09/23/91	0	29194	** 6	955	30149	0	22928
09/24/91	0	29194	0	955	30149	0	22928
09/25/91	0	29194	0	955	30149	0	22928
09/26/91	0	29194	0	955	30149	0	22928
09/27/91	0	29194	0	955	30149	0	22928
09/28/91	0	29194	0	955	30149	0	22928
09/29/91	0	29194	0	955	30149	0	22928
09/30/91	0	29194	0	955	30149	0	22928

** This is the last day worked at Bldg 644.

10/01/91	0	29194	0	955	30149	0	22928
10/02/91	0	29194	0	955	30149	800	23728
10/03/91	0	29194	0	955	30149	1020	24748
10/04/91	0	29194	0	955	30149	1000	25748
10/05/91	0	29194	0	955	30149	0	25748
10/06/91	0	29194	0	955	30149	0	25748
10/07/91	0	29194	0	955	30149	1004	26752
10/08/91	0	29194	0	955	30149	2265	29017
10/09/91	0	29194	0	955	30149	1000	30017
*** 10/10/91	0	29194	0	955	30149	998	31015

Note: *** -- Total number of 37-mm projectiles uncovered is a correct number.
Total destroyed number was not an accurate number before 7/25/91.
That's why uncovered total number was not matching destroyed total
number. It should read 30149 total destroyed.

TABLE 6
(Continued)



BUILDINGS

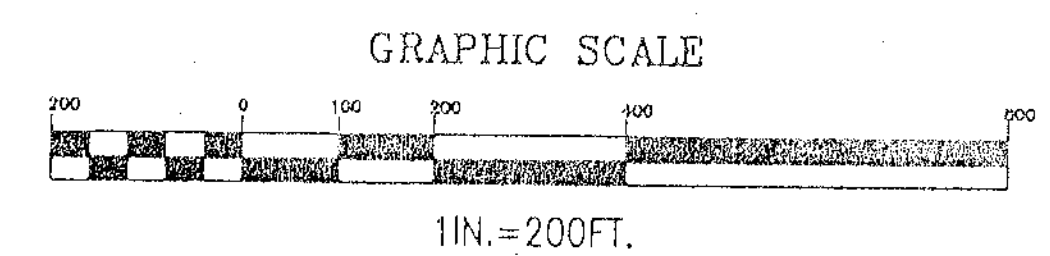
1	POLICE HEADQUARTERS
2	STUDIO THEATER
3	COLLEGE CENTER & BOOKSTORE
4	PERFORMING ARTS CENTER
5	PHYSICAL EDUCATION BUILDING
6	SOUTH I
7	SOUTH II
8	MAIN HALL
9	CENTER I
10	CENTER II
11	CENTER III
12	CENTER IV
13	L'HOMMEDEU HALL
14	RARITAN HALL
15	MAINTENANCE BLDG. 229
16	EAST HALL
17	EAST HALL ANNEX
18	STAFF RESIDENCES (7)
19	COLLEGE LIBRARY
20	JOHNSON LEARNING CENTER
21	NORTH HALL
22	NORTH I
23	ACADEMIC SERVICES
24	WEST HALL
25	WEST HALL ANNEX
26	EDISON HALL
27	TECHNICAL SERVICES CENTER

TANK #'S

N/A
18
N/A
N/A
4
13
10
N/A
6
7
8
9
N/A
3
1,2,5
12
13
19 THRU 25
N/A
N/A
14
15
N/A
17
16
N/A
N/A

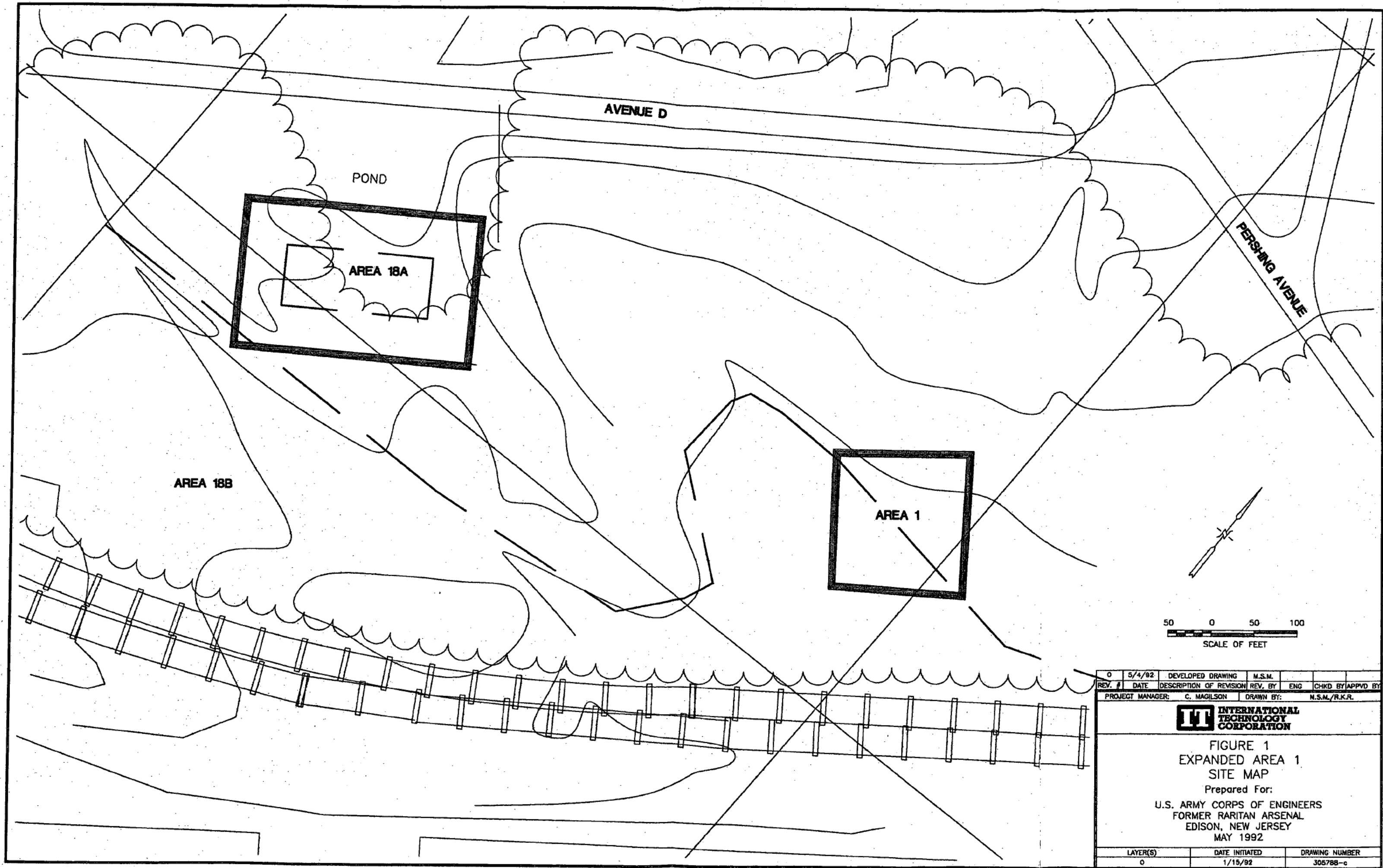
LEGEND

- #2 FUEL OIL UST (IN USE)
- ▲ #2 FUEL OIL UST (NOT IN USE)
- ⊠ UNLEADED GASOLINE UST (IN USE)
- REMOTE UST FILL PIPE
- WASTE OIL UST (NOT IN USE)
- ★ LEADED GASOLINE UST (NOT IN USE)




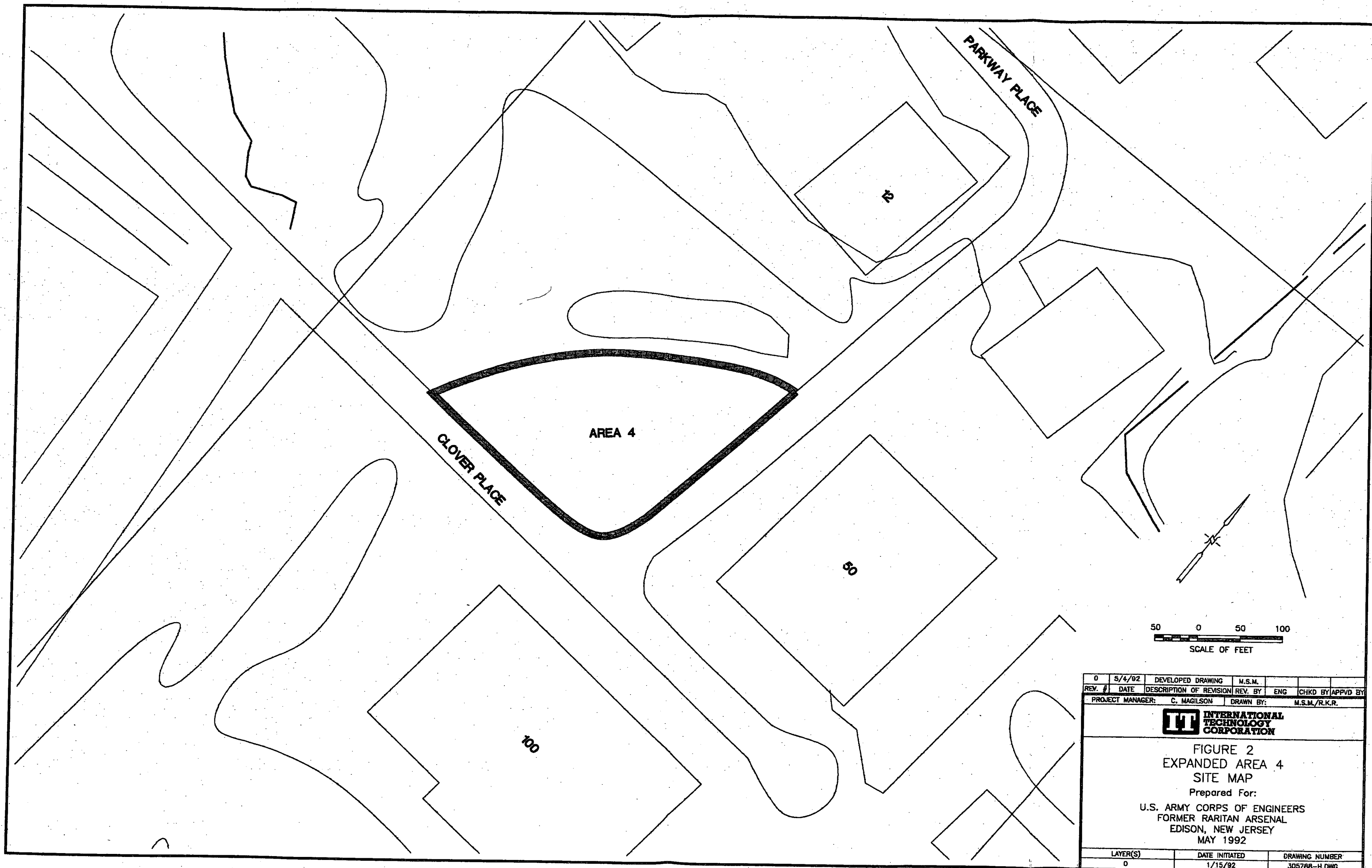
UNDERGROUND STORAGE TANKS
MIDDLESEX COUNTY COLLEGE
EDISON TOWNSHIP MIDDLESEX COUNTY NEW JERSEY
CAMPUS SURVEY

REV 1
27 AUG 1991
DRWN. BY KMR
CHKD. BY DRD
APPRD. BY JMH
19 JUNE 1991
DWG# ED0008



50 0 50 100
SCALE OF FEET

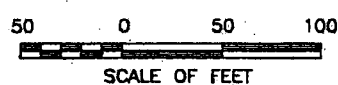
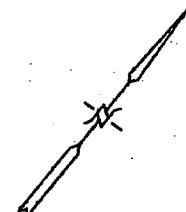
0	5/4/92	DEVELOPED DRAWING	M.S.M.			
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		C. MAGILSON	DRAWN BY:		M.S.M./R.K.R.	
 INTERNATIONAL TECHNOLOGY CORPORATION						
<p>FIGURE 1 EXPANDED AREA 1 SITE MAP</p> <p>Prepared For:</p> <p>U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992</p>						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
0		1/15/92		305788-c		




50 0 50 100
SCALE OF FEET

0	5/4/92	DEVELOPED DRAWING	M.S.M.		
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY/APPVD BY
PROJECT MANAGER:		C. MAGILSON	DRAWN BY:		M.S.M./R.K.R.
IT INTERNATIONAL TECHNOLOGY CORPORATION					
FIGURE 2 EXPANDED AREA 4 SITE MAP Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		1/15/92		305788-H.DWG	

AREA 10



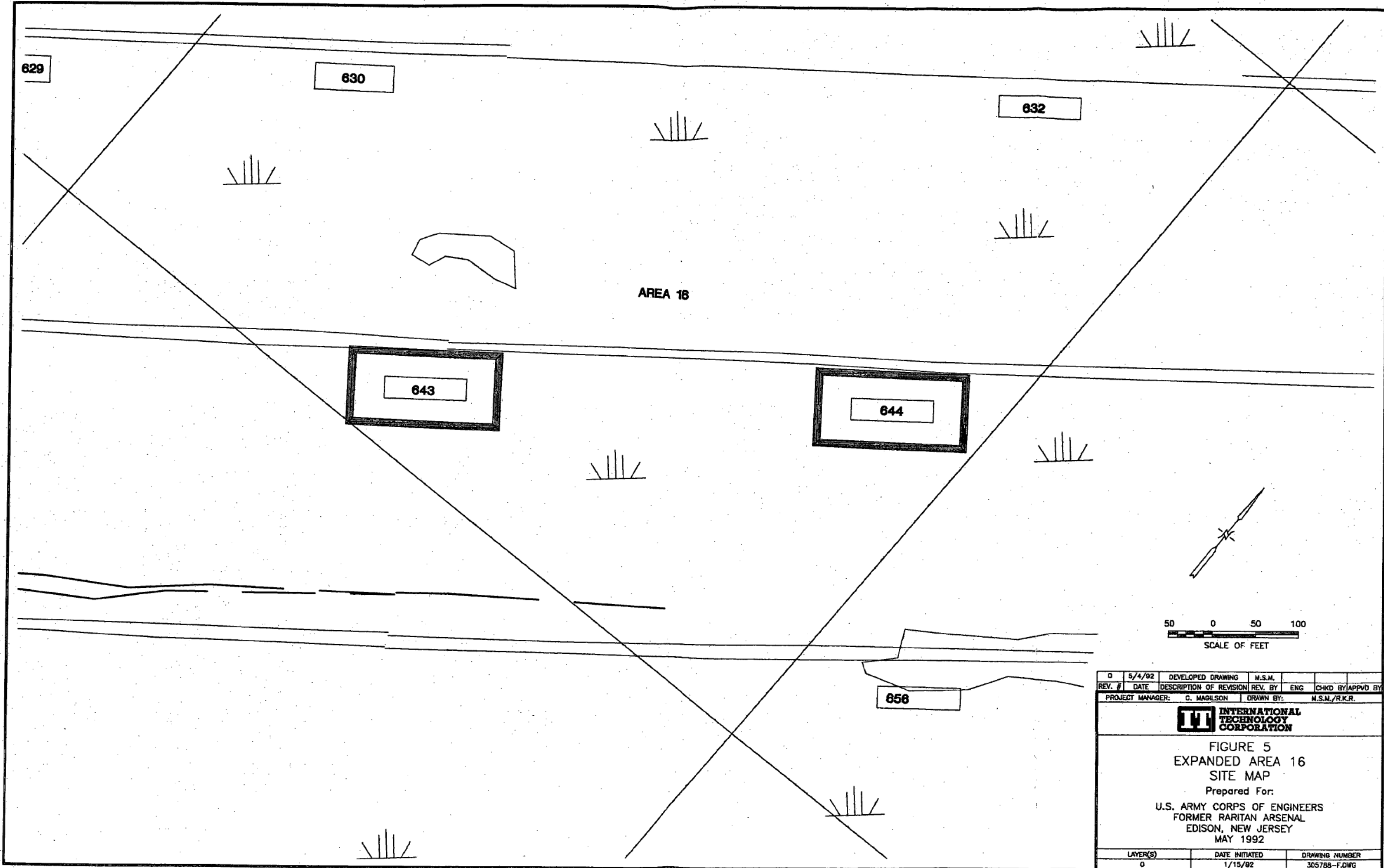
0	5/4/92	DEVELOPED DRAWING	M.S.M.			
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		C. MAGILSON		DRAWN BY:		M.S.M./R.K.R.
						
FIGURE 3 EXPANDED AREA 10 SITE MAP Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
0		1/15/92		305788-EDWG		

AREA 12

DETONATION AREA

50 0 50 100
SCALE OF FEET

0	5/4/92	DEVELOPED DRAWING	M.S.M.			
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		C. MAGILSON	DRAWN BY:		M.S.M./R.K.R.	
IT INTERNATIONAL TECHNOLOGY CORPORATION						
FIGURE 4 EXPANDED DETONATION AREA SITE MAP Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
0		1/15/92		305788-G.DWG		



50 0 50 100
SCALE OF FEET

0	5/4/92	DEVELOPED DRAWING	M.S.M.		
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY/APPVD BY
PROJECT MANAGER:		C. MAGILSON		DRAWN BY: M.S.M./R.K.R.	
INTERNATIONAL TECHNOLOGY CORPORATION					
FIGURE 5 EXPANDED AREA 16 SITE MAP Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		1/15/92		305788-F.DWG	



AREA 17

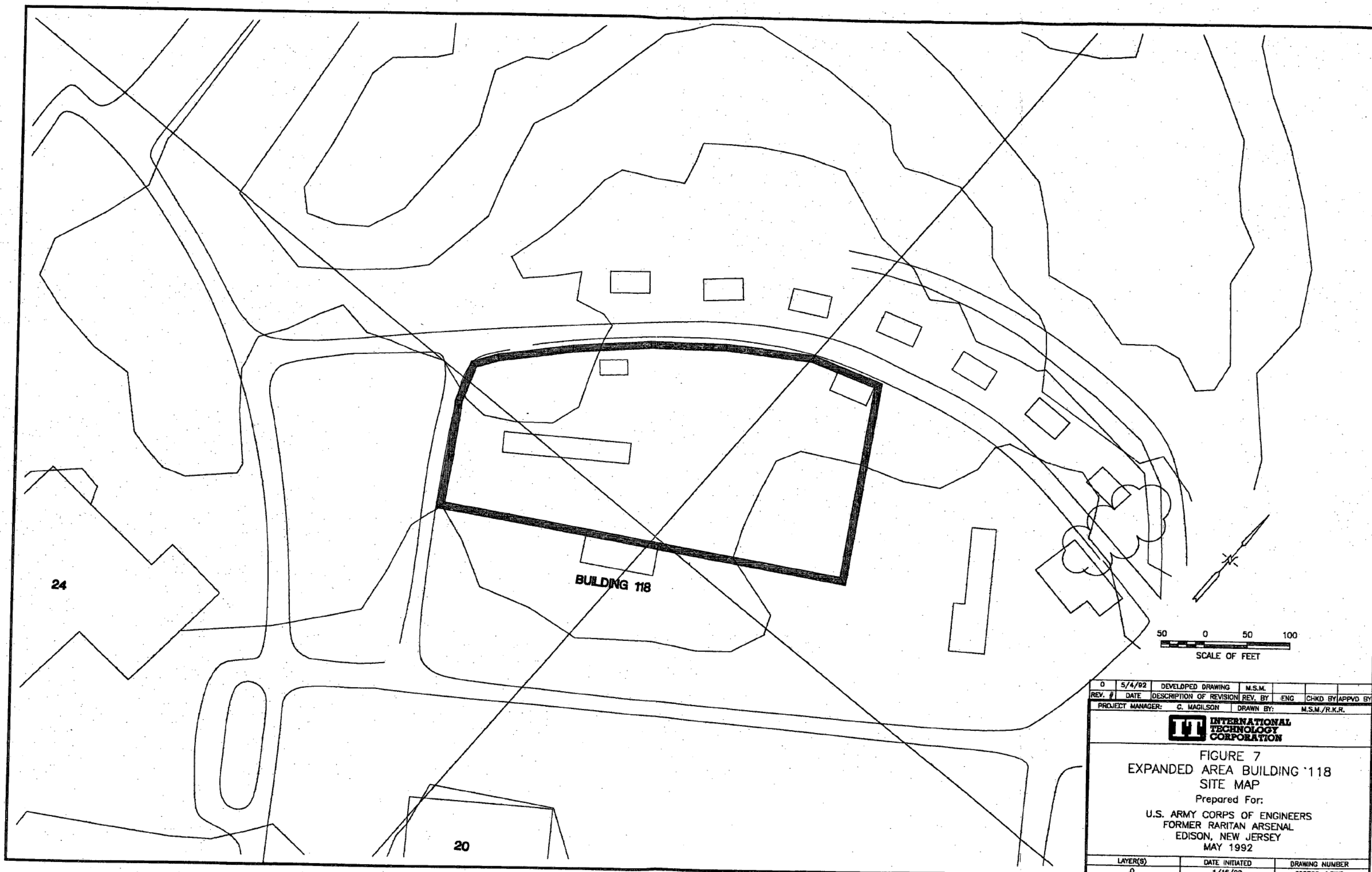
4


5

AREA 17A

50 0 50 100
SCALE OF FEET

0	5/4/92	DEVELOPED DRAWING	M.S.M.			
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		C. MAGILSON		DRAWN BY:		M.S.M./R.K.R.
IT INTERNATIONAL TECHNOLOGY CORPORATION						
FIGURE 6 EXPANDED AREAS 17 & 17A SITE MAP Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
0		1/15/92		30578B-B.DWG		



0	5/4/92	DEVELOPED DRAWING	M.S.M.			
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
PROJECT MANAGER:		C. MAGILSON	DRAWN BY:		M.S.M./R.K.R.	
 INTERNATIONAL TECHNOLOGY CORPORATION						
FIGURE 7 EXPANDED AREA BUILDING 118 SITE MAP						
Prepared For: U.S. ARMY CORPS OF ENGINEERS FORMER RARITAN ARSENAL EDISON, NEW JERSEY MAY 1992						
LAYER(S)		DATE INITIATED		DRAWING NUMBER		
0		1/15/92		305788-ADWG		

ETC

COMMENTS

ETC

COMMENTS
FOR
SPECIFIC ANALYSIS

HPLC ANALYSIS:

(OG70759):

The intact sample or extract for sample CB0331 required dilution resulting in elevated method detection limits (MDL's).

ETC

TABULATED ANALYTICAL RESULTS

ETC

TABLE 1: QUANTITATIVE RESULTS AND QUALITY ASSURANCE DATA

SPEC - HPLC ANALYSIS DATA (QR63)

MAR 24, 1992

Chain of Custody Data Required for ETC Data Management Summary Reports

CB0330 IT CORP

ITCENJTNT X 125704

03-06-92

1245

QG70759

ETC Sample No.

Company

Facility

Sample Point

Date

Time

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
9	2,4,6-Trinitrotoluene	ND	5.0	435	655	0	20	72	0	500	87

WED, MAR 18, 1992, 4:45 PM

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

Q70569

ETC Sample No.

Company

Facility

Sample Point

Date _____

Time

Elapsed
Hours

Compound	Results									
	Sample Concen.	MDL								
Aluminum Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Molybdenum Nickel Osmium Potassium Selenium Silver Sodium Strontium Thallium Tin Titanium Vanadium Zinc	ND	5.0								
∞										

TABLE 1: QUANTITATIVE RESULTS AND QUALITY ASSURANCE DATA

SPEC - HPLC ANALYSIS DATA (QR63)

Chain of Custody Data Required for ETC Data Management Summary Reports

GB0331 IT CORP

ITCENJTNT X 125705

03-06-92

1245

QG70759

ETC Sample No.

Company

Facility Sample Point

Date

Time

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l	Second ug/l	Blank Data ug/l	Concen. Added ug/l	% Recov	Unspiked Sample ug/l	Concen. Added ug/l	% Recov
6	2,4,6-Trinitrotoluene	ND	125	435	655	0	20	72	0	500	87

ETC

MAR 18 1992
QM70569

TABLE 1: QUANTITATIVE RESULTS

Metals - Analysis Data (QR52)

Chain of Custody Data Required for ETC Data Management Summary Reports

CB0331 IT CORP

ITCENJTNT X125705

920306 1245 0

ETC Sample No.

Company

Facility

Sample Point

Dātē

Time

Elapsed
Hours

Compound	Results									
	Sample Concen. ug/l	MDL ug/l								
Lead	170	5.0								

ETC

EXTRACTABLE HPLC
(High Performance Liquid Chromatography)

ETC

LC QUALITY CONTROL DATA

Calibration Summary

- Initial Calibration Report
- Continuing Calibration Report

Laboratory Blank

- Chromatogram
- Quantitation Report

Calibration Report

Title: TNT

Calibrated: <Never>

Files:

RF RF RF RF RF

.500 1.00 2.00 5.00 10.00

RRT

RF

% RSD

Compound

2,4,6-TNT

171.600 181.500 191.850 194.420 187.330 - 185.340 4.918

RF - Response Factor (Subscript is amount in)

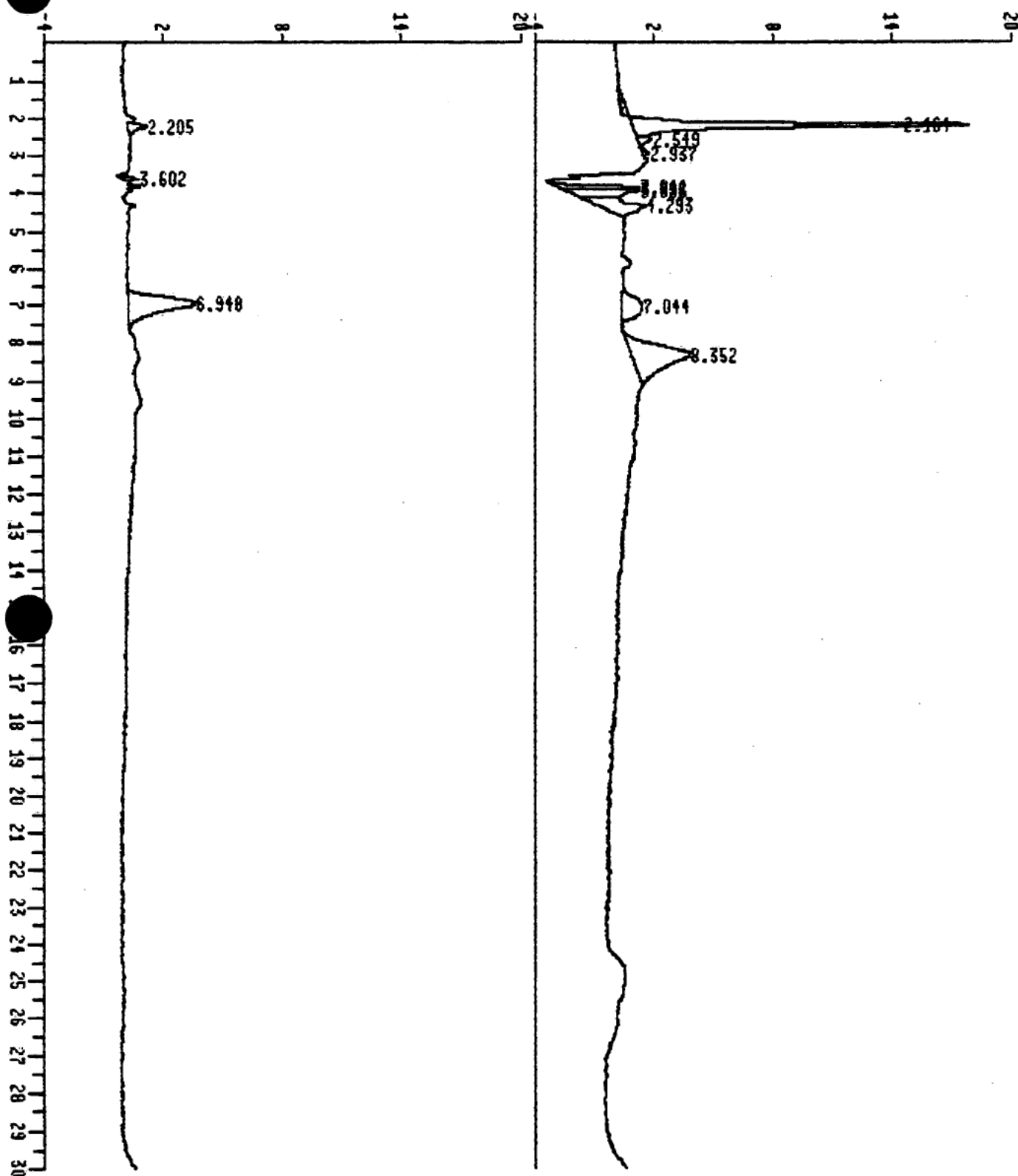
RRT - Average Relative Retention Time (RT Std/RT Istd)

RF - Average Response Factor

% RSD - Percent Relative Standard Deviation

1: LC A 254,4 450,80
2: LC C 210,4 450,80

of QC59A27A.D
of QC59A27A.D



End of plot. Time = 0.00 to 29.97 minutes

Chart speed = 0.66 cm/min

*** Height Percent ***

Report by Retention Time

```
=====
Operator: CAO                                     23 Mar 92   5:00 pm
Method File Name : DUPONT1.M
Sample Info : QC70759 ,QC70759
Misc Info: QC70759 ,QC70759
Integration File Name : DATA:QC59A27A.I
consisting of channels : 1. A 254,4   450,80   of QC59A27A.D
                        2. C 210,4   450,80
Sequence Index: 1      Bottle Number : 27      Repetition Number: 1
=====
```

Ret Time	Signal	Descr	Type	Area	Height	Height%	Ratio%	Width	Sym
2.164	C	210,4	450,80	BV	147.42	16.9851	52.73	100.00	0.134 0.58
2.205	A	254,4	450,80	VB	9.8480	0.9696	18.64	100.00	0.144 0.69
2.549	C	210,4	450,80	VV	7.5217	0.7237	2.25	100.00	0.122 0.72
2.937	C	210,4	450,80	VV	2.7111	0.3447	1.07	100.00	0.109 2.31
3.602	A	254,4	450,80	PV	3.7616	0.8382	16.12	100.00	0.059 1.49
3.811	C	210,4	450,80	PV	17.1718	4.0638	12.62	100.00	0.063 1.68
3.896	C	210,4	450,80	VV	40.7454	3.7149	11.53	100.00	0.150 0.37
4.293	C	210,4	450,80	VV	46.7687	2.4183	7.51	100.00	0.242 1.11
6.948	A	254,4	450,80	BV	89.6819	3.3926	65.24	100.00	0.318 0.76
7.044	C	210,4	450,80	BV	35.7074	1.0343	3.21	100.00	0.426 0.84
8.352	C	210,4	450,80	BV	112.24	2.9250	9.08	100.00	0.457 0.94

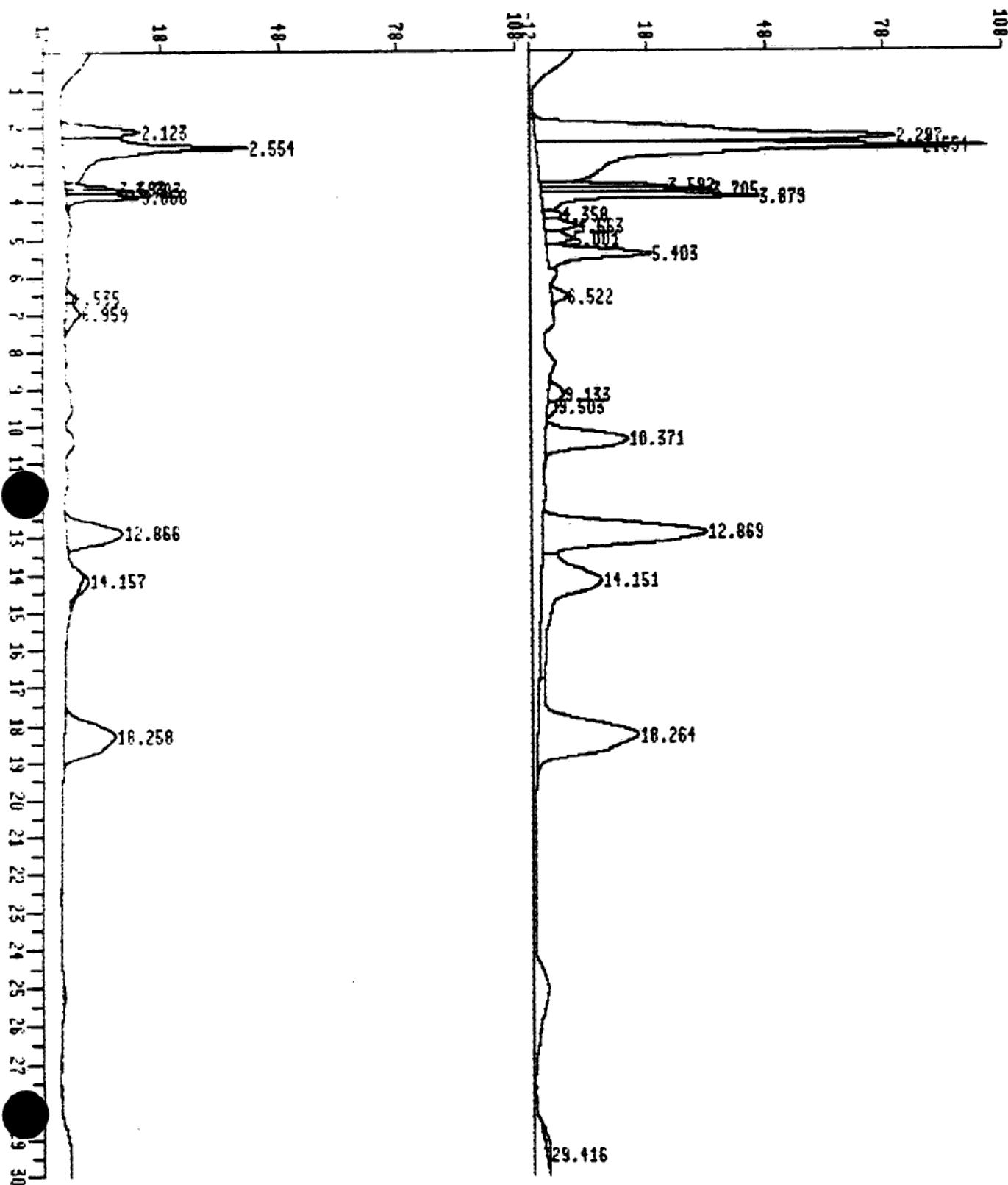
ETC

LC SAMPLE DATA

- Chromatogram
- Quantitation Report
- Confirmation Chromatogram (when required)
- Confirmation Quantitation Report (when required)

LC A 254,4 450,80
 LC C 210,4 450,80

of QC59A29A.D
 of QC59A29A.D



End of plot. Time = 0.00 to 29.98 minutes

Chart speed = 0.66 cm/min

*** Height Percent ***

Report by Retention Time

Operator: CAO

23 Mar 92 6:02 pm

Method File Name : DUPONT1.M

Sample Info : CB0330C ,QC70759

Misc Info: CB0330C ,QC70759

Integration File Name : DATA:QC59A29A.I

consisting of channels : 1. A 254,4 450,80 of QC59A29A.D

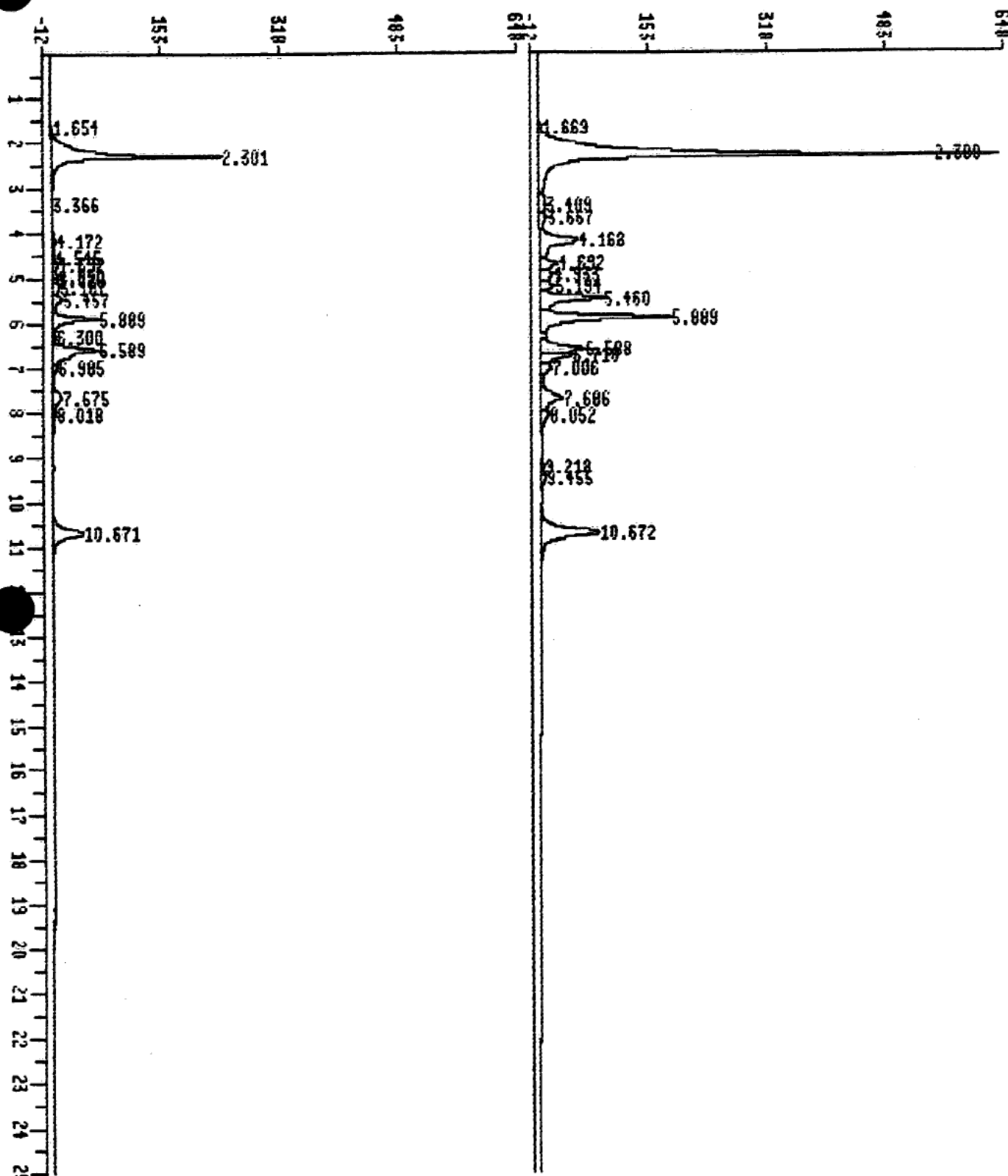
2. C 210,4 450,80

Sequence Index: 1 Bottle Number : 29 Repetition Number: 1

Ret Time	Signal	Descr	Type	Area	Height	Height%	Ratio%	Width	Sym
2.123	A	254,4 450,80	BV	354.56	19.8506	13.24	100.00	0.239	1.23
2.297	C	210,4 450,80	BV	1973.74	91.7440	18.40	100.00	0.313	2.08
2.554	A	254,4 450,80	VV	1006.55	47.2022	31.48	41.09	0.279	0.58
2.554	C	210,4 450,80	VV	2236.19	114.87	23.03	100.00	0.258	0.31
3.593	A	254,4 450,80	VV	61.5550	12.4564	8.31	37.41	0.067	2.12
3.592	C	210,4 450,80	VV	167.69	33.3003	6.68	100.00	0.068	1.68
3.703	A	254,4 450,80	VV	124.21	17.4616	11.64	40.16	0.094	1.07
3.705	C	210,4 450,80	VV	270.12	43.4842	8.72	100.00	0.085	1.36
3.868	A	254,4 450,80	VV	178.22	18.8110	12.54	34.02	0.123	0.94
3.879	C	210,4 450,80	VV	612.22	55.2933	11.09	100.00	0.154	1.06
4.358	C	210,4 450,80	VV	56.6593	4.4275	0.89	100.00	0.159	0.92
4.663	C	210,4 450,80	VV	125.91	8.2503	1.65	100.00	0.210	1.30
5.001	C	210,4 450,80	VV	105.95	6.7823	1.36	100.00	0.212	1.47
5.403	C	210,4 450,80	VV	467.06	26.3603	5.29	100.00	0.278	1.03
6.535	A	254,4 450,80	PV	28.2407	1.6503	1.10	43.25	0.223	1.46
6.522	C	210,4 450,80	PV	68.2721	3.8156	0.77	100.00	0.277	1.39
6.959	A	254,4 450,80	VV	105.32	3.5744	2.38	100.00	0.364	0.78
9.133	C	210,4 450,80	PV	101.17	3.7956	0.76	100.00	0.339	1.17
9.503	C	210,4 450,80	VV	49.1973	2.4650	0.49	100.00	0.248	0.55
10.371	C	210,4 450,80	PV	628.97	21.0005	4.21	100.00	0.502	0.89
12.866	A	254,4 450,80	BV	498.14	14.2130	9.48	34.18	0.485	0.94
12.869	C	210,4 450,80	VV	1527.59	41.5841	8.34	100.00	0.620	0.89
14.157	A	254,4 450,80	BB	29.3729	1.8583	1.24	12.20	0.195	0.75
14.151	C	210,4 450,80	VV	955.50	15.2324	3.05	100.00	0.915	0.61
18.258	A	254,4 450,80	BB	655.81	12.8742	8.59	50.61	0.651	0.71
18.264	C	210,4 450,80	VB	1412.89	25.4392	5.10	100.00	0.828	0.94
29.416	C	210,4 450,80	BBA	56.5024	0.8643	0.17	100.00	0.819	3.46

1: LC A 254,4 450,80
2: LC C 210,4 450,80

of TNCFA44A.D
of TNCFA44A.D



End of plot. Time = 0.01 to 24.98 minutes

Chart speed = 0.79 cm/min

Report by Retention Time

Operator: CAO

24 Mar 92 1:36 pm

Method File Name : TNTCOF.M

Sample Info : CB0330 ,QC70759

Misc Info:

Integration File Name : DATA:TNCFA44A.I

consisting of channels : 1. A 254,4 450,80 of TNCFA44A.D

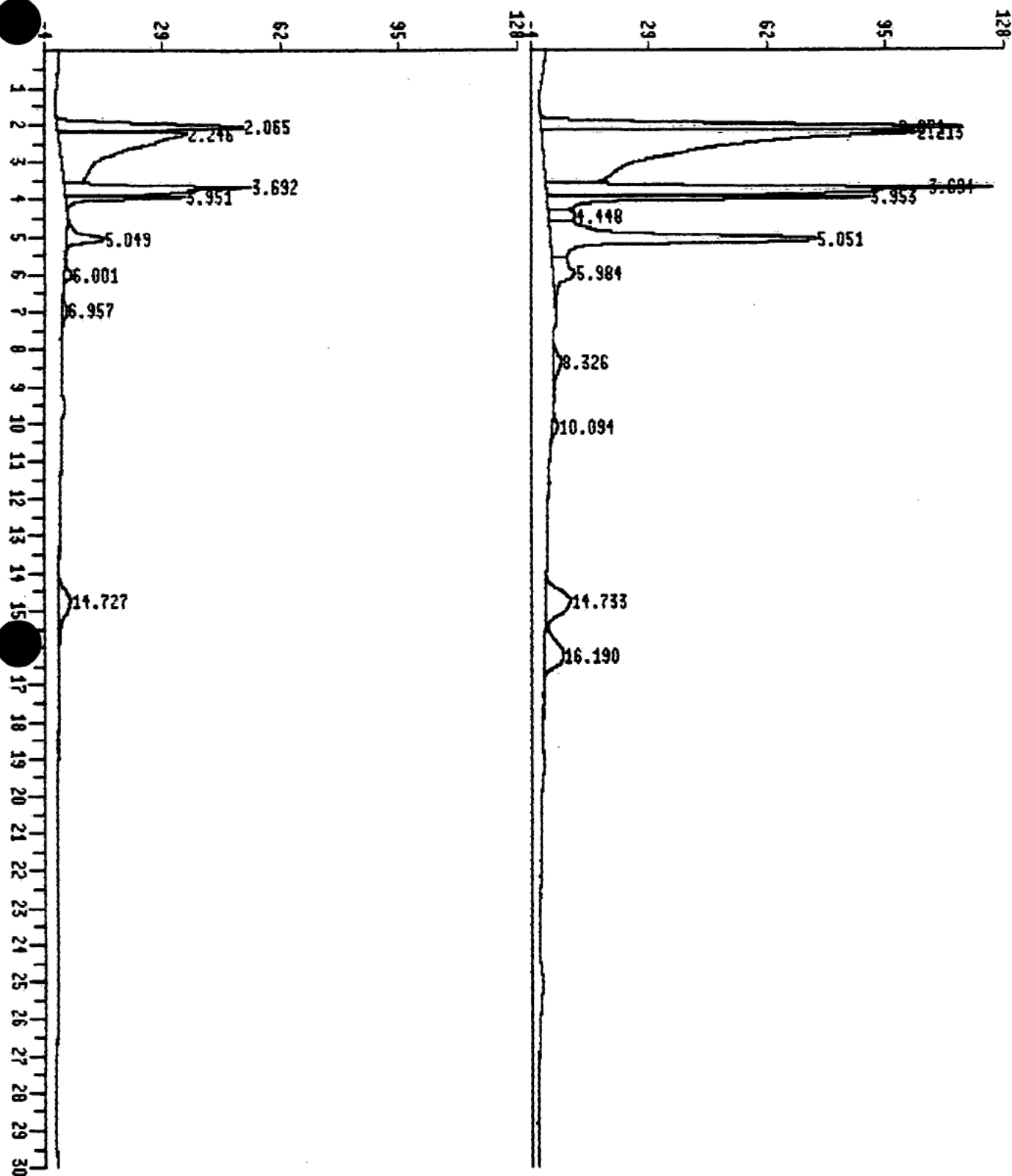
2. C 210,4 450,80

Sequence Index: 1 Bottle Number : 44 Repetition Number: 1

Ret Time	Signal	Descr	Type	Area	Height	Height%	Ratio%	Width	Sym
1.654	A	254,4	450,80	BV	6.0587	0.8825	0.18	25.97	0.63
1.669	C	210,4	450,80	BV	22.4428	3.3984	0.26	100.00	1.90
2.301	A	254,4	450,80	VV	2035.67	243.90	50.37	37.56	0.107
2.300	C	210,4	450,80	VV	5895.00	649.45	49.47	100.00	0.116
3.366	A	254,4	450,80	VB	1.9203	0.2301	0.05	100.00	0.116
3.409	C	210,4	450,80	VV	191.98	8.0759	0.62	100.00	0.310
3.667	C	210,4	450,80	VV	157.27	9.1675	0.70	100.00	0.217
4.172	A	254,4	450,80	VV	58.7124	3.5205	0.73	6.49	0.216
4.168	C	210,4	450,80	VV	862.23	54.2615	4.13	100.00	0.210
4.545	A	254,4	450,80	VV	24.5026	2.0967	0.43	100.00	0.151
4.692	A	254,4	450,80	VV	68.0810	6.5542	1.35	25.84	0.141
4.692	C	210,4	450,80	VV	263.61	25.3656	1.93	100.00	0.143
4.950	A	254,4	450,80	VV	51.1543	6.6114	1.37	37.31	0.110
4.933	C	210,4	450,80	VV	230.55	17.7196	1.35	100.00	0.177
5.020	A	254,4	450,80	VV	34.6421	6.5053	1.34	100.00	0.065
5.187	A	254,4	450,80	VV	110.60	9.0928	1.88	44.01	0.164
5.194	C	210,4	450,80	VV	194.40	20.6615	1.57	100.00	0.133
5.457	A	254,4	450,80	VV	155.65	12.3827	2.56	14.02	0.169
5.460	C	210,4	450,80	VV	868.14	88.2987	6.73	100.00	0.138
5.889	A	254,4	450,80	VV	537.56	62.7766	12.97	34.40	0.126
5.889	C	210,4	450,80	VV	1644.29	182.48	13.90	100.00	0.131
6.300	A	254,4	450,80	VV	29.6164	3.2680	0.67	100.00	0.131
6.589	A	254,4	450,80	VV	724.41	61.9262	12.79	100.00	0.163
6.588	C	210,4	450,80	VV	618.87	61.9353	4.72	100.01	0.142
6.718	C	210,4	450,80	VV	413.53	44.3470	3.38	100.00	0.134
6.985	A	254,4	450,80	VV	79.7046	6.7340	1.39	43.13	0.171
7.006	C	210,4	450,80	VV	230.02	15.6147	1.19	100.00	0.204
7.675	A	254,4	450,80	VV	222.86	12.8707	2.66	42.46	0.232
7.686	C	210,4	450,80	VV	522.07	30.3114	2.31	100.00	0.233
8.018	A	254,4	450,80	VV	34.9682	2.6471	0.55	100.00	0.156
8.052	C	210,4	450,80	VV	194.83	11.1383	0.85	100.00	0.238
9.218	C	210,4	450,80	VV	41.0906	3.1907	0.24	100.00	0.177
9.455	C	210,4	450,80	VV	111.89	7.3494	0.56	100.00	0.215
10.671	A	254,4	450,80	BV	650.66	42.1829	8.71	52.71	0.226
10.672	C	210,4	450,80	VV	1232.10	80.0218	6.10	100.00	0.227

1: LC A 234,4 450,80
2: LC C 210,4 450,80

of QC59A31A.D
of QC59A31A.D



End of plot. Time = 0.00 to 29.98 minutes

Chart speed = 0.66 cm/min

*** Height Percent ***

Report by Retention Time

Operator: CAO

23 Mar 92 7:04 pm

Method File Name : DUPONT1.M

Sample Info : CB0331C ,QC70759 (1:25)

Misc Info: CB0331C ,QC70759 1:25

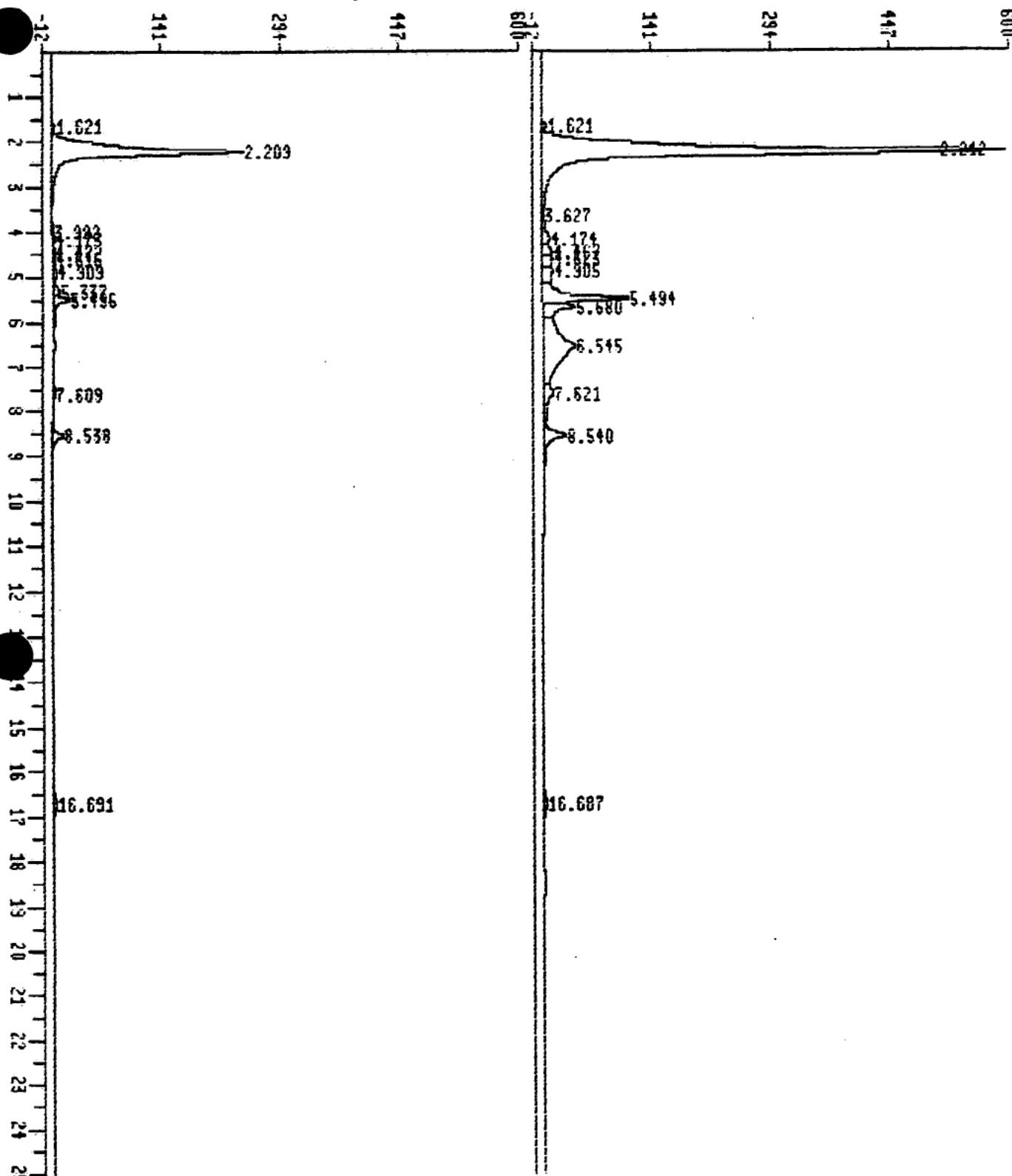
Integration File Name : DATA:QC59A31A.I

consisting of channels : 1. A 254,4 450,80 of QC59A31A.D

2. C 210,4 450,80

Sequence Index: 1 Bottle Number : 31 Repetition Number: 1

Ret Time	Signal	Descr	Type	Area	Height	Height%	Ratio%	Width	Sym	
2.065	A	254,4	450,80	BV	594.92	52.2331	27.29	44.31	0.173	1.47
2.071	C	210,4	450,80	PV	1259.61	117.88	21.71	100.00	0.150	1.96
2.213	C	210,4	450,80	VV	3538.36	104.75	19.29	100.00	0.422	0.12
2.246	A	254,4	450,80	VV	1375.32	36.1539	18.89	100.00	0.469	0.12
3.692	A	254,4	450,80	VV	594.12	52.3502	27.35	41.74	0.145	0.49
3.694	C	210,4	450,80	VV	1454.97	125.43	23.10	100.00	0.148	0.46
3.951	A	254,4	450,80	VV	248.41	33.3806	17.44	36.78	0.111	0.87
3.953	C	210,4	450,80	VV	777.04	90.7523	16.71	100.00	0.124	0.69
4.448	C	210,4	450,80	VV	141.62	7.5366	1.39	100.00	0.248	1.12
5.049	A	254,4	450,80	BV	173.56	10.6108	5.54	14.23	0.253	1.39
5.051	C	210,4	450,80	VV	1310.70	74.5485	13.73	100.00	0.270	1.17
6.001	A	254,4	450,80	VB	39.1733	2.0729	1.08	34.16	0.255	1.27
5.984	C	210,4	450,80	VV	223.90	6.0685	1.12	100.00	0.505	1.32
6.957	A	254,4	450,80	BB	38.5301	1.3818	0.72	100.00	0.363	0.66
8.326	C	210,4	450,80	BB	79.4017	2.1382	0.39	100.00	0.469	0.80
10.094	C	210,4	450,80	BB	42.8581	1.5091	0.28	100.00	0.351	0.91
14.727	A	254,4	450,80	BB	156.64	3.2240	1.68	46.34	0.586	0.59
14.733	C	210,4	450,80	BV	301.79	6.9567	1.28	100.00	0.567	0.71
16.190	C	210,4	450,80	VV	256.35	5.3794	0.99	100.00	0.566	1.19



End of plot. Time = 0.00 to 24.97 minutes

Chart speed = 0.79 cm/min

*** Height Percent ***

Report by Retention Time

Operator: CAO

24 Mar 92 12:19 pm

Method File Name : TNTCOF.M

Sample Info : CB0331C ,QC70759 20---500

Misc Info:

Integration File Name : DATA:TNCFA41A.I

consisting of channels : 1. A 254,4 450,80 of TNCFA41A.D

2. C 210,4 450,80

Sequence Index: 1 Bottle Number : 41 Repetition Number: 1

Ret Time	Signal	Descr	Type	Area	Height	Height%	Ratio%	Width	Sym
1.621	A	254,4	450,80	BV	24.2125	3.3001	1.04 45.08	0.105	0.53
1.621	C	210,4	450,80	BV	55.9301	7.3212	0.82 100.00	0.112	0.55
2.209	A	254,4	450,80	VV	3314.68	248.80	78.73 41.59	0.172	1.11
2.212	C	210,4	450,80	VV	8220.64	598.19	66.73 100.00	0.188	1.00
3.627	C	210,4	450,80	VV	25.0782	2.5784	0.29 100.00	0.123	0.66
3.992	A	254,4	450,80	PV	12.0834	1.3760	0.44 100.00	0.110	7.33
4.173	A	254,4	450,80	VV	33.0298	2.8899	0.91 28.77	0.171	1.43
4.174	C	210,4	450,80	VV	184.61	10.0449	1.12 100.00	0.244	2.62
4.472	A	254,4	450,80	VV	28.2597	2.2700	0.72 17.92	0.164	2.25
4.467	C	210,4	450,80	VV	156.30	12.6664	1.41 100.00	0.170	2.00
4.616	A	254,4	450,80	VV	20.9922	2.3750	0.75 18.76	0.128	0.82
4.623	C	210,4	450,80	VV	155.73	12.6584	1.41 100.00	0.166	0.50
4.909	A	254,4	450,80	VV	89.3635	5.0926	1.61 38.66	0.237	0.70
4.905	C	210,4	450,80	VV	250.31	13.1713	1.47 100.00	0.242	0.54
5.337	A	254,4	450,80	VV	86.5434	8.7972	2.78 100.00	0.134	2.11
5.496	A	254,4	450,80	VV	187.53	19.7845	6.26 17.88	0.135	0.54
5.494	C	210,4	450,80	VV	1088.77	110.65	12.34 100.00	0.138	1.42
5.680	C	210,4	450,80	VV	445.24	41.2199	4.60 100.00	0.149	0.41
6.545	C	210,4	450,80	VV	1910.88	42.1027	4.70 100.00	0.558	0.77
7.609	A	254,4	450,80	BV	40.4100	3.0422	0.96 22.61	0.180	1.38
7.621	C	210,4	450,80	VV	338.46	13.4523	1.50 100.00	0.324	0.54
8.538	A	254,4	450,80	PV	157.42	14.2613	4.51 49.35	0.166	0.82
8.540	C	210,4	450,80	VV	419.66	28.8971	3.22 100.00	0.206	0.69
16.691	A	254,4	450,80	BB	83.6657	4.0409	1.28 100.00	0.304	0.89
16.687	C	210,4	450,80	BV	71.1225	3.4372	0.38 85.06	0.266	24 0.93

ETC

CHAIN OF CUSTODY DOCUMENTATION

- Chain of Custody Forms
- Laboratory Chronicles
- Subcontract

CHAIN OF CUSTODY

ADDRESS: Raritan Arsenal Facility

Attn: _____

SAMPLE DESCRIPTION:

Total Lead + Nitro Exp

125705 CB0331

Shuttle Number: Coker1 Seal Number: TAPE only Temp: —



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 363597
Page 1 of ____

Project Name/No. ¹ USACE/305777 Samples Shipment Date ⁷ 3/6/92
Sample Team Members ² Dolly Li Lab Destination ⁸ ETC
Profit Center No. ³ 3811 Lab Contact ⁹ Cathy Hanrahan
Project Manager ⁴ Chick Magilson Project Contact/Phone ¹² Dolly Li 548-8775
Purchase Order No. ⁶ 470274 Carrier/Waybill No. ¹³
Required Report Date ¹¹ 3/21/92

Bill to: ⁵ IT Corp. R.A.
P.O. Box 5902
Edison, NJ 08837
Report to: ¹⁰ IT Corp. R.A.
P.O. Box 5902
Edison, NJ 08837

ONE CONTAINER PER LINE

Sample Number ¹⁴	Sample Description/Type ¹⁵	Date/Time Collected ¹⁶	Container Type ¹⁷	Sample Volume ¹⁸	Pre-servative ¹⁹	Requested Testing Program ²⁰	Condition on Receipt ²¹	Disposal Record No. ²²
125704	Blank	3/6/92 1245	glass bottle	2L	None	① Total Lead ② Nitro-explosives		
125705	Wastewater	↓	↓	↓	↓			

Special Instructions: ²³

Possible Hazard Identification: ²⁴

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: ²⁵

Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: ²⁶

Normal ☐ Rush ☒ 14-day TAT

QC Level: ²⁷

I. ☐ II. ☐ III. ☐ Project Specific (specify): Standard QC

1. Relinquished by ²⁸ Dolly Li
(Signature/Affiliation)

Date: 3/6/92
Time: 1315

1. Received by ²⁸ David Taylor
(Signature/Affiliation)

Date: 3-6-92
Time: 1406

2. Relinquished by
(Signature/Affiliation)

Date:
Time:

2. Received by
(Signature/Affiliation)

Date:
Time:

3. Relinquished by
(Signature/Affiliation)

Date:
Time:

3. Received by
(Signature/Affiliation)

Date:
Time:

Comments: ²⁹



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.³⁰

Page 1 of 1

Project Name USACE
Former Raritan Arsenal

Project No. 305777

Samples Shipment Date 3/6/92

ONE CONTAINER PER LINE

[illegible]

-U U 5/2-445

7/14/92

COMMENTS:

14 DAY T/A SPEC: TNT BY HPLC USING SOLID PHASE EXTRACTION Prep
SEE C. FELL FOR COPY OF METHOD. USE CB0331 as MS/MSD

DATE _____

3-12-92

- 3/23/92

EHD: _____
ESD: 3-12-92
ECD: 3-12-92

SUPERVISOR

DATE _____

29

Tape # _____ Inj. _____ ul _____

[illegible][illegible]

R : redo

ETC

SAMPLE PREPARATION LOG - METALS

BATCH # QM 70569

MATRIX water

[illegible]

Matrix Spike and Duplicate Information

Sample ID			CB 0331					
-1			50	50				
(MS) A1			0.5	50				
(D) -2			50	50				

Sample ID							
-1							
(MS) A1							
(D) -2							

Analyst:		A. Hall		
Date:		3/1/92		

**No. 2 FUEL OIL UST
CLOSURE REPORT
MIDDLESEX COUNTY COLLEGE**

PREPARED FOR:

**U.S. ARMY CORPS OF ENGINEERS
FORMER RARITAN ARSENAL
P.O. BOX 6433
EDISON, NEW JERSEY 08818-6433**

PREPARED BY:

**IT CORPORATION
P.O. BOX 7809
EDISON, NEW JERSEY 08818-7809**

JANUARY 1992

PROJECT NO. 305788/029



January 21, 1992

Project No. 305788

Mr. Matthew McDermott
Bureau of Underground Storage Tanks
Division of Responsible Party Site Remediation
New Jersey Department of Environmental Protection and Energy
CN 029
Trenton, New Jersey 08625-0029

No. 2 Fuel Oil UST Closure Report
Middlesex County College, Edison, New Jersey
Case No. 91-19-1559-04; UST No. 0119829

Dear Mr. McDermott:

Enclosed for your review are two copies of the above-referenced report, prepared in accordance with NJAC 7:14B-9.5. As stated in my November 21, 1991 letter, this 1,500 gallon underground storage tank (UST) was removed on October 23, 1991 as part of the U.S. Army Corps of Engineers (USACE) Ordnance Removal project at the former Raritan Arsenal.

Postexcavation soil samples were collected after the UST was removed and analytical results are included in this Closure Report. The results were evaluated according to the new site assessment procedures for soils, effective November 1991, which require remediation of total petroleum hydrocarbons (TPHC) levels over 1,000 milligrams per kilogram (mg/kg). Due to the presence of unexcavated ordnance in the immediate vicinity of the former UST, it is impossible to safely remove contaminated soil within the standard 90 day period for completing a closure report. Consequently, this report reflects TPHC concentrations of in-situ soil that directly contacted the tank bottom. The remaining affected soils and piping will be removed after ordnance removal is complete, which should be by June 1, 1992. Additional soil sample results will be included in the DICAR report to be submitted by September 30, 1992.

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

IT Corporation is a wholly owned subsidiary of International Technology Corporation

EDIS/12-91/ENG/KP864-rpt

Mr. Matthew McDermott

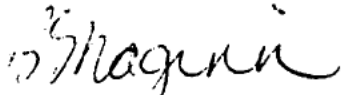
2

January 21, 1992

Please contact me or Jim Wagner at (908) 225-2000 if you have any questions or would like to discuss this matter.

Very truly yours,

IT CORPORATION



Barbara Maginn, P.E.
Sr. Project Engineer

BM:kp
Attachments

cc: B. Bauman - USACE
P. Dalal - USACE
P. Hilf - Middlesex County College
C. Magilson - IT
J. Wagner - IT

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2	Cross-sectional View 1500 Gallon No. 2 Fuel Oil UST

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B	Tanknology Corporation International Tank Integrity Test Report
C	Middlesex County College Site Plan
D	Analytical Results

1.0 Introduction

On September 19, 1991, a 1,500 gallon single wall underground storage tank (UST) containing No. 2 fuel oil was partially uncovered behind Building 118 at Middlesex County College (MCC), located in Edison, New Jersey. The tank was uncovered during unexploded ordnance removal by contractors for the U.S. Army Corps of Engineers (USACE) Ordnance Removal project. Petroleum contaminated soil was encountered while excavating for ordnance around the tank. The New Jersey Department of Environmental Protection and Energy (NJDEPE) hotline was notified on September 19, 1991 and assigned Case No. 91-9-19-1559-04.

As noted in correspondence to NJDEPE from IT Corporation (IT) dated November 21, 1991 and January 2, 1992, the 1,500 gallon tank was removed on October 23, 1991. The required form for removal (Standard Reporting Form) was sent to the NJDEPE, Bureau of Underground Storage Tanks (BUST) on October 30, 1991.

Section 2.0 of this report describes the closure procedures, while Section 3.0 presents site assessment postexcavation soil sampling results. Section 4.0 presents conclusions and future actions. A completed Site Assessment Summary form is presented in Appendix A of this report. Tightness testing results and a site map are provided in Appendices B and C, respectively. Appendix D includes the analytical results for the postexcavation soil samples.

2.0 Closure Activities

2.1 Tank Decommissioning

Shortly after the NJDEPE-Hotline was notified on September 19, 1991 concerning the discovery of contaminated soil near the 1,500 gallon UST, the contents of the tank were pumped out by MCC. In an effort to identify the cause of the discharge, approximately 1,000 gallons of clean water were then placed in the tank.

On October 4, 1991, Tanknology Corporation International tested the integrity of the tank only. It was found to be tight and the probable cause of contamination was concluded to be spillage during refueling and/or the piping and connections. The complete integrity test report is presented in Appendix B.

Decommissioning activities were initiated by IT Remediation Services (ITRS) and Lionetti Oil Recovery. A backhoe was used to excavate the area around the UST so that work could begin on cleaning and removing the tank. Approximately 1 cubic yard of soil demonstrating slightly elevated HNU readings was excavated staged on and covered with polyethylene sheeting.

On October 23, 1991, Lionetti Oil Recovery and ITRS pumped the water out of the tank, flushed the tank and piping with a low pressure steam cleaner, and then pumped out the rinsate and pumpable tank residuals. The specialty ordnance removal contractor, EOD Technology (EODT), excavated the area around the tank and using a chain and backhoe, hoisted the tank out of the excavation. It was then staged in a secured area adjacent to the excavation on plastic sheeting. The disconnected piping was located in an area not yet cleared of ordnance, and was therefore left in the ground.

2.2 Excavation Screening

Immediately after the UST and surrounding soils were removed, an HNU was used to screen the walls and floor of the excavation in order to determine possible "hot spots" for postexcavation sampling. All HNU readings in the excavation were low. There were no visible or sensory signs of leakage into the soil. No further excavation (other than that needed to remove the tank) was conducted.

2.3 Site Assessment

A site plan of the entire facility can be found in Appendix C. This site plan was furnished by MCC, and it should be noted that Building 118 in Figure 1 is labeled Building 21 on the

MCC site plan. Three postexcavation soil samples and one field blank were collected on October 23, 1991, immediately following the tank removal. Figure 1 shows the location of the UST excavation and soil samples collected.

The minimum number of samples required by the September, 1990 BUST Closure Guidelines is three for a UST with a capacity of less than 2,000 gallons. The base of the excavation for the UST was approximately six feet below grade. Soil samples were collected along the center line of the tank outline, six inches below the base of the excavation. A cross-section of the excavation is shown in Figure 2. All samples were collected, labelled and transported according to NJDEPE protocol.

3.0 Site Assessment Results

Based on the fact that the tank stored No. 2 fuel oil, all three samples were analyzed for total petroleum hydrocarbons (TPHC). TPHC concentrations were not detected in Sample B-1. Samples B-2 and B-3 contained TPHC at concentrations of 950 milligrams per kilogram (mg/kg), and 3,900 mg/kg, respectively. Analytical results for postexcavation samples collected are presented in Appendix D.

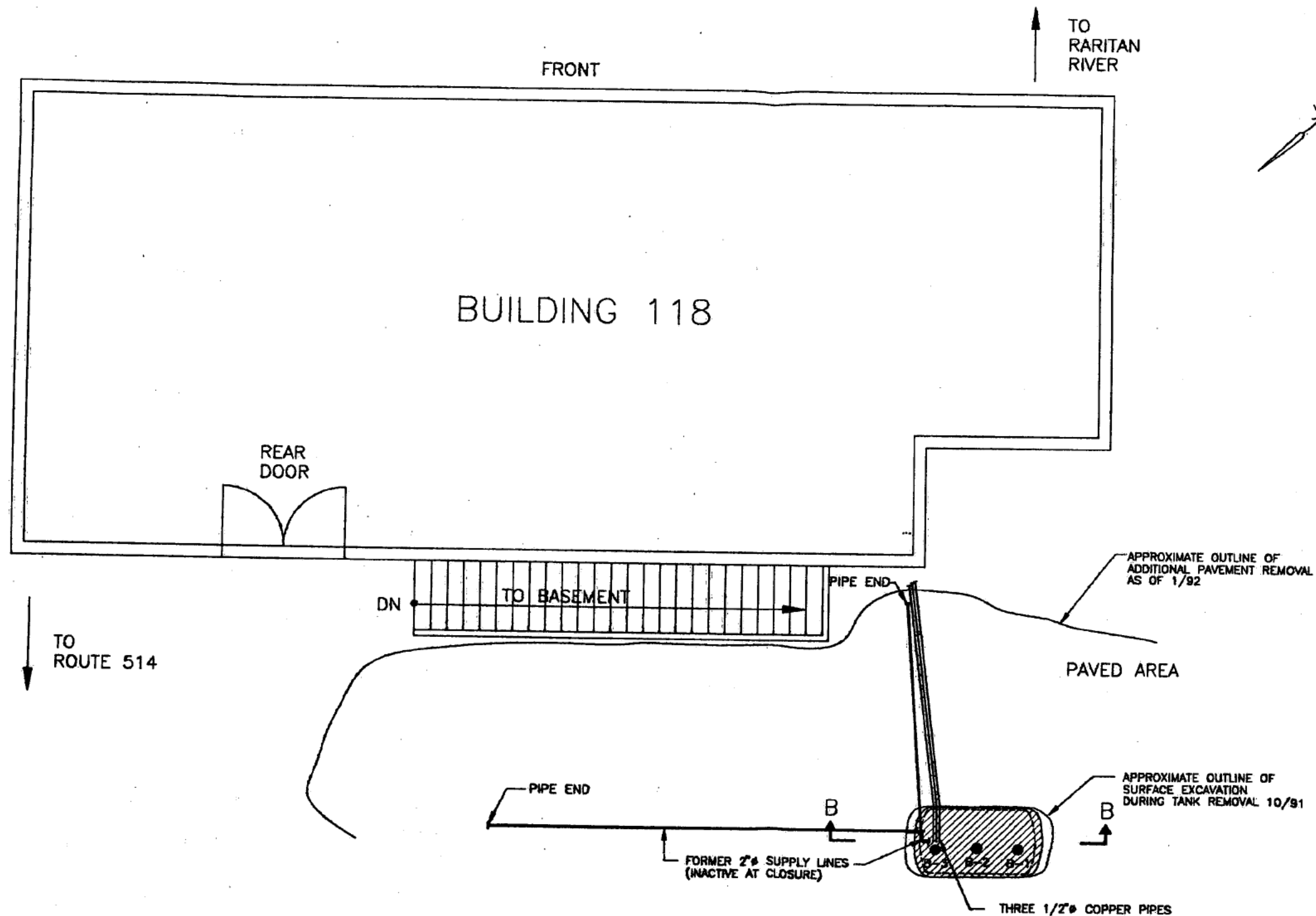
Because of the elevated TPHC levels in samples B-2 and B-3 and the fact that additional soil excavation would be conducted for ordnance removal, the samples were not analyzed further for base neutral compounds (as per NJDEPE guidance then).

4.0 Conclusions and Future Actions

Sample B-3, with a TPHC concentration of 3,900 mg/kg, exceeded the current BUST action level of 1,000 mg/kg. Comparison of the individual concentrations detected in Samples B-1 and B-2 and with the results of the tank integrity test support the contention that the contamination is likely attributable to the piping connections at the north end of the tank.

In order to determine the extent of contamination, further soil removal and sampling beneath the former UST is proposed. This will be performed in conjunction with ordnance removal by EODT. In addition, all existing piping will be assessed as ordnance removal proceeds in this area. When excavation of unexploded ordnance surrounding the tank and piping is concluded, piping will be located, removed and disposed of properly. Additional samples will be collected for each 15 feet of piping, and analyzed for TPHC.

If groundwater is encountered during excavation and remediation of contaminated soil, a monitoring well will be installed, sampled and analyzed in accordance with N.J.A.C. 7:14B-9.2. However, if required, one will not be installed until after June 1, 1992 due to the presence of unexcavated ordnance. Groundwater analytical results will be included in the DICAR report to be submitted to NJDEPE by September 30, 1992. This report will address both this UST system and the 112 gallon gasoline UST removed on August 27, 1991 (Case No. 91-08-22-1645).



5 0 5 10
SCALE OF FEET

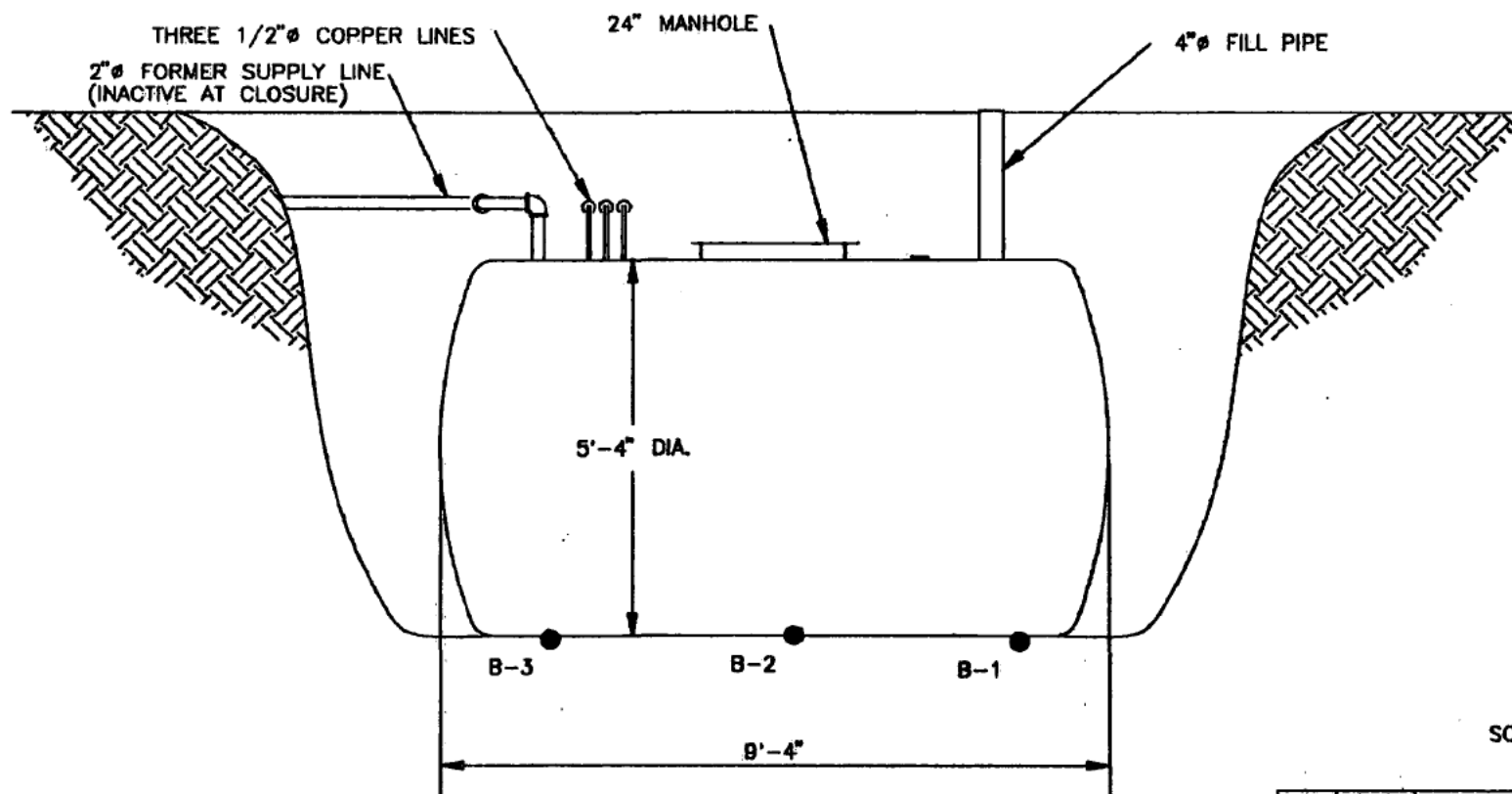
LEGEND

- B-1 SAMPLE LOCATION
- ▨ DEEP EXCAVATION AREA
- FORMER TANK LOCATION

NOTES:

1. ALL SAMPLES COLLECTED ON 10/23/91 FROM 6" BELOW BASE OF EXCAVATION.
2. FOR SECTION B-B REFER TO FIGURE 2.

0	1/13/92	DEVELOPED DRAWING	EKW	EC	<i>MLC</i>
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY/APPRD BY
PROJECT MANAGER:		B. MAGINN		DRAWN BY: J.R. DANZA	
INTERNATIONAL TECHNOLOGY CORPORATION					
FIGURE 1 POSTEXCAVATION SAMPLE LOCATIONS 1500 GAL. No.2 FUEL OIL UST REMOVAL Prepared For: RARITAN ARSENAL MIDDLESEX COUNTY COLLEGE PROJECT No. 305788 JANUARY 1992					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		12/13/91		305788-E	



SECTION B-B

SCALE: 3/8" = 1'-0"

LEGEND

B-1 ● SAMPLE LOCATION

NOTES:

1. ALL SAMPLES COLLECTED ON 10/23/91.
2. GROUNDWATER NOT ENCOUNTERED.
3. SOIL IS SANDY WITH SMALL QUANTITIES OF SILT AND CLAY.
4. SECTION B-B TAKEN FROM FIGURE 1.

0	1/13/92	DEVELOPED DRAWING	ENW	JW	PC.
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY/APPVD BY
PROJECT MANAGER: B. MAGINN			DRAWN BY: J.R. DANZA		
<p>FIGURE 2 CROSS SECTIONAL VIEW 1500 G. No.2 FUEL OIL UST REMOVAL Prepared For: RARITAN ARSENAL MIDDLESEX COUNTY COLLEGE PROJECT No. 305788 JANUARY 1992</p>					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		12/13/91		305788E1	

APPENDIX A
SITE ASSESSMENT SUMMARY

UST-014
2/91

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

FOR STATE USE ONLY	
UST #	_____
Date Rec'd	_____
TMS #	_____
Staff	_____

**UNDERGROUND STORAGE TANK
SITE ASSESSMENT SUMMARY**

*Under the provisions of the Underground Storage
of Hazardous Substances Act
in accordance with N.J.A.C. 7:14B*

This Summary form shall be used by all owners and operators of Underground Storage Tank Systems (USTS) who have either reported a release and are subject to the site assessment requirements of N.J.A.C. 7:14B-8.2 or who have closed USTS pursuant to N.J.A.C. 7:14B-9.1 et seq. and are subject to the site assessment requirements of N.J.A.C. 7:14B-9.2 and 9.3.

INSTRUCTIONS:

- Please print legibly or type.
- Fill in all applicable blanks. This form will require various attachments in order to complete the Summary. The technical guidance document, Interim Closure Requirements for UST's, explains the regulatory (and technical) requirements for closure and the Scope of Work, Investigation and Corrective Action Requirements for Discharges from Underground Storage Tanks and Piping Systems explains the regulatory (and technical) requirements for corrective action.
- Return one original of the form and all required attachments to the above address.
- Attach a scaled site diagram of the subject facility which shows the information specified in Item IV B of this form.
- Explain any "No" or "N/A" response on a separate sheet.

Date of Submission January 13, 1992

0119829
FACILITY REGISTRATION #

I. FACILITY NAME AND ADDRESS

Middlesex County College
155 Mill Road - P. O. Box 3050
Edison, NJ County Middlesex
Telephone No. (908) 906-2568

OWNERS NAME AND ADDRESS, if different from above

Telephone No. _____

II. DISCHARGE REPORTING REQUIREMENTS

A. Was contamination found? ☒ Yes ☐ No If Yes, Case No. 9-19-1550-04
(Note: All discharges must be reported to the Environmental Action Hotline (800) 292-7172)

B. The substance(s) discharged was(were) No. 2 Fuel Oil

C. Have any vapor hazards been mitigated? ☐ Yes ☐ No ☒ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. Exempt *See IT Corporation
letter of November 21, 1991

The site assessment requirements associated with tank decommissioning are explained in the Technical Guidance Document, Interim Closure Requirements for UST's, Section V. A-D. Attach complete documentation of the methods used and the results obtained for each of the steps of tank decommissioning used. Please include a site map which shows the locations of all samples and borings, the location of all tanks and piping runs at the facility at the beginning of the tank closure operation and annotated to differentiate the status of all tanks and piping (e.g., removed, abandoned, temporarily closed, etc.). The same site map can be used to document other parts of the site assessment requirements, if it is properly and legibly annotated.

IV. SITE ASSESSMENT REQUIREMENTS

A. Excavated Soil

Any evidence of contamination in excavated soil will require that the soil be classified as either Hazardous Waste or Non-Hazardous Waste. Please include all required documentation of compliance with the requirements for handling contaminated excavated soil (if any was present) as explained in the technical guidance documents for closure and corrective action. Describe amount of soil removed, its classification, and disposal location.

B. Scaled Site Diagrams

1. Scaled site diagrams must be attached which include the following information:

- North arrow and scale
- The locations of the ground water monitoring wells
- Location and depth of each soil sample and boring
- All major surface and sub-surface structures and utilities
- Approximate property boundaries
- All existing or closed underground storage tank systems, including appurtenant piping
- A cross-sectional view indicating depth of tank, stratigraphy and location of water table
- Locations of surface water bodies

C. Soil samples and borings (check appropriate answer)

- Were soil samples taken from the excavation as prescribed? ☒ Yes ☐ No ☐ N/A
- Were soil borings taken at the tank system closure site as prescribed? ☐ Yes ☐ No ☒ N/A
- Attach the analytical results in tabular form and include the following information about each sample
 - Customer sample number (keyed to the site map)
 - The depth of the soil sample
 - Soil boring logs
 - Method detection limit of the method used
 - QA/QC Information as required

* See 1/92 closure report.
(Appendix D and Figures 2 & 3)

D. Ground Water Monitoring

1. Number of ground water monitoring wells installed 0
2. Attach the analytical results of the ground water samples in tabular form. Include the following information for each sample from each well:
 - a. Site diagram number for each well installed
 - b. Depth of ground water surface
 - c. Depth of screened interval
 - d. Method detection limit of the method used
 - e. Well logs
 - f. Well permit numbers
 - g. QA/QC information as required

V. SOIL CONTAMINATION

- A. Was soil contamination found? ☒ Yes ☐ No
 If "Yes", please answer Question B-E
 If "No", please answer Question B

- B. The highest soil contamination still remaining in the ground has been determined to be:
1. N/A ppb total BTEX, N/A ppb total non-targeted VOC
 2. N/A ppb total B/N, N/A ppb total non-targeted B/N
 3. 3,900 ppm TPHC
 4. N/A ppb N/A (for non-petroleum substance)

C. Remediation of free product contaminated soils

*No investigation was done on property boundary; only in UST excavation. No off-site

1. All free product contaminated soil on the property boundaries and above the water table are believed to have been removed from the subsurface ☒ Yes ☒ No (See above) ☒ Yes ☒ No impacts suspected.
2. Free product contaminated soils are suspected to exist below the water table ☐ Yes ☒ No
3. Free product contaminated soils are suspected to exist off the property boundaries. ☐ Yes ☒ No

- D. Was the vertical and horizontal extent of contamination determined? ☐ Yes ☒ No ☐ N/A *See Section 4.0 of Closure Rpt
- E. Does soil contamination intersect ground water? ☐ Yes ☐ No ☐ N/A *Unknown

VI. GROUND WATER CONTAMINATION

- A. Was ground water contamination found? ☐ Yes ☒ No
 If "Yes", please answer Questions B-G.
 If "No", please answer only Question B.
- Unable to install wells due to possibility of unexploded ordnance. See Section 4.0 of Closure Report.

- B. The highest ground water contamination at any 1 sampling location and at any 1 sampling event to date has been determined to be:

N/A

1. ppb total BTEX, ppb total non-targeted VOC
2. ppb total B/N, ppb total non-targeted B/N
3. ppb total MTBE, ppb total TBA
4. ppb (for non-petroleum substance)
5. greatest thickness of separate phase product found
6. separate phase product has been delineated ☐ Yes ☐ No ☐ N/A

C. Result(s) of well search

Not applicable

1. A well search (including a review of manual well records) indicates that private, municipal or commercial wells do exist within the distances specified in the Scope of Work. ☐ Yes ☐ No ☒ N/A
2. The number of these wells identified is .

D. Proximity of wells and contaminant plume N/A

1. The shallowest depth of any well noted in the well search which may be in the horizontal or vertical potential path(s) of the contaminant plume(s) is _____ feet below grade (consideration has been given for the effects of pumping, subsurface structures, etc. on the direction(s) of contaminant migration). This well is _____ feet from the source and its screening begins at a depth of _____ feet.
2. The shallowest depth to the top of the well screen for any well in the potential path of the plume(s) (as described in D1 above) is _____ feet below grade. This well is located _____ feet from the source.
3. The closest horizontal distance of a private, commercial or municipal well in the potential path of the plume (as determined in D1) is _____ feet from the source. This well is _____ feet deep and screening begins at a depth of _____ feet.

E. A plan for separate phase product recovery has been included. ☐ Yes ☐ No ☒ N/A

F. A ground water contour map has been submitted which includes the ground water elevations for each well.
☐ Yes ☐ No ☒ N/A

G. Delineation of contamination Not applicable

1. The ground water contaminants have been delineated to MCLs or lower values at the property boundaries. ☐ Yes ☐ No
2. The plume is suspected to continue off the property at concentrations greater than MCLs.
☐ Yes ☐ No
3. Off property access (circle one): is being sought has been approved has been denied

VII. SITE ASSESSMENT CERTIFICATION [preparer of site assessment plan - N.J.A.C. 7:14B-8.3(b) & 9.5(a)3]

The person signing this certification as the "Qualified Ground Water Consultant" (as defined in N.J.A.C. 7:14B-1.6) responsible for the design and implementation of the site assessment plan as specified in N.J.A.C. 7:14B-8.3(a) & 9.2(b)2, must supply the name of the certifying organization and certification number.

"I certify under penalty of law that the information provided in this document is true, accurate, and complete and was obtained by procedures in compliance with N.J.A.C. 7:14B-8 and 9. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Barbara Maginn

SIGNATURE

B. Maginn

COMPANY NAME IT Corporation
(Preparer of Site Assessment Plan)

DATE

1/14/92

CERTIFYING
ORGANIZATION NJ Professional Engineer

CERTIFICATION

NUMBER GF34387

VIII. **TANK DECOMMISSIONING CERTIFICATION** [person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)4]

"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) J. DENNIS RECCA

SIGNATURE 

COMPANY NAME IT Corporation
(Performer of Tank Decommissioning)

DATE 1/15/92

IX. **CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY**

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(e)1].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____ SIGNATURE _____

COMPANY NAME Middlesex County College DATE _____

B. The following certification shall be signed as follows [according to the requirements of N.J.A.C. 7:14B-2.3(C)2]:

1. For a corporation, by a principal executive officer of at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____ SIGNATURE _____

COMPANY NAME _____ DATE _____

VIII. **TANK DECOMMISSIONING CERTIFICATION** [person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)4]

"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____ SIGNATURE _____

COMPANY NAME IT Corporation DATE _____
(Performer of Tank Decommissioning)

IX. **CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY**

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(c)1f].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Paul Hilt SIGNATURE Paul Hilt

COMPANY NAME Middlesex County College DATE 1/16/92

B. The following certification shall be signed as follows [according to the requirements of N.J.A.C. 7:14B-2.3(C)2f]:

1. For a corporation, by a principal executive officer of at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

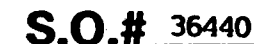
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) PAUL HILT SIGNATURE Paul Hilt

COMPANY NAME MIDDLESEX COUNTY COLLEGE DATE 1/16/92

APPENDIX B

***TANKNOLOGY CORPORATION INTERNATIONAL
TANK INTEGRITY TEST REPORT***



Service Address: Middlesex County College, 155 Mill Road & Woodbridge, Edison, NJ 08837 **Attention:** Barb Maginn

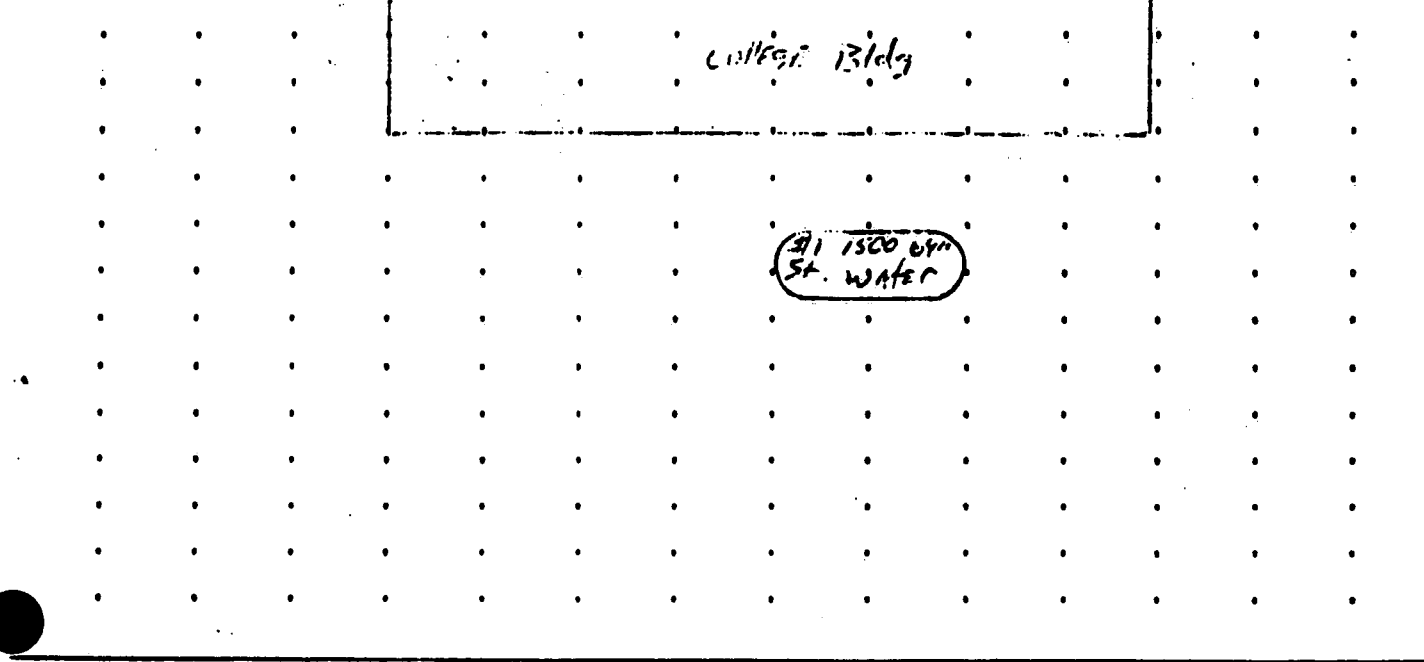
Original VacuTect data recordings are reviewed by Tanknology's Audit Control Department and maintained on file.

SD# 36440 Cust. T- Corporation Site#

MONITOR WELLS

Number	1	2	3	4	5	6	7	8	9	10	11	12
Depth		<i>None</i>										
Water												
Prod. Detected												
NOT Det.												

Location Diagram



Parts and Labor used

General Comments Tank Filled (1000 Gallons) Backhoe Uncovered Area Surrounding Tank Until Underneath Tank. No Water Tank Present. Location of Tank Given by Person Calling Lines from Tank Very Old and Corroded This Tank Line Broken. Since Tank No Longer in Service Was Given the go ahead to cut lines on top of tank and then cut tank.

When local regulations require immediate reporting of a system leak-Complete the following:
Reported to: _____

 Name Date Time

Phone Number CUSTOMER or Regulatory Agency File Number

Clint Pearson
 Certified Testers Name
Clint Pearson
 Certified Testers Signature

0190
 Vacutect In Certification Number
10/4/91
 Date Testing Completed Form-Tanks/Lines 1/91

TANKNOLOGY CORPORATION INTERNATIONAL

5225 Hollister, Houston, Texas 77040-6294

Phone: (713) 690-TANK

Fax: (713) 690-2255

Certificate of Tightness

Underground storage tank system(s) tested and found tight for:

Service Order # 36440

Test date 10/4/91

☐ Tank(s) & Piping,
Quan.

☒ Tank(s) Only,
Quan.

☐ Piping only,
Quan.

Tank Owner/Address Middlesex County College

Test Site Address 155 Mill Road & Woodbridge, Edison, NJ 08837

Tank sizes & products tested Tank #1 Water 1500 Gal.

Piping Tested _____

#0190

09/23/93

Jim Kean

Unit Mgr. Signature

Valid only with
Corporate Seal

Certification # & Expiration Date

U. S. Patent # 4462249, Canadian Patent # 1165693, European Patent Appl. # 169263

TANKNOLOGY & VacuTest are trademarks of TANKNOLOGY CORPORATION INTERNATIONAL

Note: See VacuTest Test Report for tank identification and site location drawing.
Form-Cert.3/89

APPENDIX D
ANALYTICAL RESULTS



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Raritan Arsenal
c/o IT Corp.
165 Fieldcrest Ave.
Edison, NJ 08837
Attn: Ms. Barbara Maginn

Date: October 29, 1991

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 082691-B

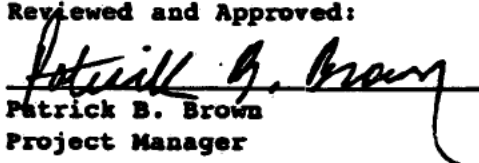
This is the Certificate of Analysis for the following samples:

Client Project ID: SOIL
Date Received: 10/23/91
Number of Samples: 4
Sample Type: SOIL

1 Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
B-1/0-6"/SOIL	F1-10-223-01
B-2/0-6"/SOIL	F1-10-223-02
B-3/0-6"/SOIL	F1-10-223-03
FIELD BLANK	F1-10-223-04

Reviewed and Approved:


Patrick B. Brown
Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: Raritan Arsenal
Date: October 29, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Work Order: F1-10-223

SAMPLE ID	B-1/0-6"/SOIL	B-2/0-6"/SOIL	B-3/0-6"/SOIL	
SAMPLED	10/23/91	10/23/91	10/23/91	
TEST				UNITS
Petroleum	ND	950	3900	mg/Kg Dry Wt.
Hydrocarbons	[24]	[480]	[480]	
Total Solids	85	83	84	Percent
	[0.01]	[0.01]	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
 Date: October 29, 1991
 Client Job No.: 305788

IT ANALYTICAL SERVICES
 EDISON, NJ
 (201) 225-2000
 Work Order: F1-10-223

SAMPLE ID SAMPLED TEST	FIELD BLANK 10/23/91	UNITS
Petroleum Hydrocarbons	ND [1.0]	mg/L

ND indicates the parameter was not detected.
 Detection limits are specified in [].

Company: Raritan Arsenal
Date: October 29, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Work Order: F1-10-223

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.

MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery

MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter

RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Tribromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorodate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SJB46 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Surrogate Recoveries		
Method 8015	Water	Soil
Acetone	68-132	68-132

Surrogate Recoveries		
Herbicides**	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	

**GASOLINE TANK
CLOSURE REPORT**

PREPARED FOR:

**US ARMY CORPS OF ENGINEERS
FORMER RARITAN ARSENAL
P.O. BOX 6433
EDISON NJ 08818-6433**

PREPARED BY:

**IT CORPORATION
P.O. BOX 7809
EDISON, NEW JERSEY 08818-7809**

NOVEMBER 1991

PROJECT NO. 305788/027



November 27, 1991

Project No. 305788

Mr. Matthew McDermott
Bureau of Underground Storage Tanks
Division of Responsible Party Site Remediation
New Jersey Department of Environmental
Protection and Energy
CN 029
Trenton, New Jersey 08625-0029

Gasoline Tank Closure Report
Middlesex County College, Edison, NJ
Case No. 91-08-22-1645; UST No. 0119829

Dear Mr. McDermott:

Enclosed for your review are two copies of the above-referenced report, prepared in accordance with N.J.A.C. 7:14B-9.5. As stated in my November 21, 1991 letter, this 112 gallon underground storage tank (UST) was removed on August 27, 1991 as part of the U.S. Army Corps of Engineers (USACE) Ordnance Removal project at the former Raritan Arsenal.

Postexcavation soil samples were collected after the gasoline UST was removed and the analytical results are included in this Closure Report. According to the September 1990 Closure Guidelines, a monitoring well is required because the former UST stored gasoline. Due to the presence of unexcavated ordnance in the immediate vicinity of the former UST, it is impossible to safely install a monitor well within the standard 90 day period for completing a Closure Report. Consequently, this report includes soil results only. The monitor well will be installed after ordnance removal is complete, which should be by June 1, 1992. The groundwater sample results will be included in the DICAR report to be submitted by September 30, 1992.

Also in accordance with the Closure Guidelines, the 112 gallon UST, previously unknown to Middlesex County College, was registered with NJDEPE on September 16, 1991. At that

Regional Office

165 Fieldcrest Avenue • P.O. Box 7809 • Edison, New Jersey 08818-7809 • 201-225-2000

EDIS/11-91/ENG/D64-rm1

IT Corporation is a wholly owned subsidiary of International Technology Corporation

Mr. Matthew McDermott

2

November 27, 1991

time, Middlesex County College was understood to be the owner of this tank. It has since been determined that the USACE owned the tank; a Standard Reporting Form indicating this is included as part of the enclosed closure report.

Please contact me or Lapyan Chan at (908) 225-2000 if you have any questions or would like to discuss.

Very truly yours,

IT CORPORATION



Barbara Maginn, P.E.
Sr. Project Engineer

BM:lh
305788-029-01-001

cc: B. Bauman - USACE
P. Dalal - USACE
P. Hilf - Middlesex Co. College
L. Chan - IT
C. Magilson - IT
File 305788

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B	Middlesex County College Site Plan
C	Standard Reporting Form

1.0 Introduction

On August 22, 1991, a 112 gallon underground storage tank (UST) containing leaded gasoline was uncovered behind Building 118 at Middlesex County College (MCC), located in Edison, New Jersey. The tank's existence was unknown to the MCC administration, and was uncovered when contractors for the U.S. Army Corps of Engineers (USACE) Ordnance Removal project encountered it during their excavation of the area. Because gasoline odors were noted in the soils surrounding the UST and holes were observed in the top and sides of the UST, the New Jersey Department of Environmental Protection and Energy (NJDEPE) hotline was notified that day. NJDEPE assigned Case No. 91-8-22-1645-09.

The 112 gallon tank was removed on August 27, 1991. The forms for registration and removal (Standard Reporting Form) were sent to the NJDEPE, Bureau of Underground Storage Tanks (BUST) on September 16, 1991. The following closure activities were undertaken for this tank: cleaning, removal and disposal; postexcavation soil sampling and analysis; and completion of this closure report.

2.0 Closure Activities

2.1 Tank Decommissioning

Decommissioning activities were initiated by IT Remediation Services (ITRS) by pumping the residual gasoline from the UST into a 55 gallon drum. The tank was then cleaned with a high pressure water jet and the rinsate was drummed. The specialty ordnance removal contractor, EOD Technology (EODT), hand dug around the tank to expose it for removal. Approximately 0.5 cubic yards of impacted soils from around the UST were also removed and placed in two 55 gallon drums.

The UST was removed as follows: one 3/4-inch diameter pipe connected to the top of the UST and running into the south wall of the excavation (towards the building) was cut and both ends were crimped. Each end was then folded over itself three times to seal it. No product was found in or around the piping. The disconnected piping was left in the ground because it is located in an area not yet cleared of ordnance. ITRS used chains and a backhoe to lift the tank out of the excavation, and placed it on plastic sheeting. ITRS removed the tank from the site the same day for proper disposal.

2.2 Excavation Screening

Immediately after the UST was removed, an HNU was used to screen the walls and floor of the excavation in order to determine possible "hot spots" for postexcavation sampling. No additional samples other than the three collected for the site assessment were required as all HNU readings were low.

2.3 Site Assessment

Three postexcavation soil samples and one field blank were collected on August 27, 1991, immediately following the tank removal. Figure 1 shows the location of the UST excavation and soil samples collected from the base of it. A site plan of the entire facility can be found in Appendix B. This site plan was furnished by MCC, and it should be noted that Building 118 in Figure 1 is labeled Building 21 on the MCC site plan.

The minimum number of samples required by the BUST is three for a UST with a capacity of less than 2000 gallons. The base of the excavation for this 112 gallon UST was five feet below grade. Soil samples were collected along the center line of the tank outline, 6" below the base of the excavation. The three samples are spaced 1.5 feet apart. A cross section of the excavation is shown in Figure 2.

After sample collection was complete the hole was lined with PVC plastic and backfilled with clean soil.

3.0 Site Assessment Results

According to the NJDEPE Closure Guidelines, postexcavation soil samples for gasoline UST closures must be analyzed for volatile organic compounds with a forward library search (VO+15), xylene and lead. Due to the fact that the tank had been out of service for longer than 12 months and the gasoline stored was suspected of being leaded, the soil samples were also analyzed for Total Petroleum Hydrocarbons (TPHC) and Base Neutrals (B/N) +15. As required by the NJDEPE's Closure Guidelines, the lead was analyzed by "Test Methods for Evaluating Solid Waste", USEPA SW846. The levels of TPHC, B/N +15, xylene, and VO+15 were all non-detectable. Sample B1 had a lead concentration of 24 ppm; B2, a lead concentration of 28 ppm; and B3, a lead concentration of 20 ppm. All three of these samples are well below the NJDEPE guidelines of 250 ppm for lead in soil (non-industrial areas).

The concentration of base neutral library search compounds in samples B2 and B3 were 14.9 ppm and 62.0 ppm respectively. These levels exceeded the NJDEPE guideline for priority pollutant base neutral compounds of 10 ppm. All analytical results are presented in Table 1.

TABLE 1
 POSTEXCAVATION ANALYTICAL RESULTS
 112 GALLON UST REMOVAL
 FORMER RARITAN ARSENAL
 MIDDLESEX COUNTY COLLEGE
 EDISON, NEW JERSEY

SAMPLE	TPH (ppm)	BASE NEUTRALS (ppb)	BASE NEUTRALS LIBRARY SEARCH * (ppb)	VOC (ppb)	VOA LIBRARY SEARCH * (ppb)	LEAD (ppm)
B1	ND [22]	ND [370]	2,700 (B) 1,220	ND-1	ND-2	24 [2.2]
B2	ND [24]	ND [400]	14,910	ND-1	11	28 [2.4]
B3	ND [24]	ND [390]	62,020 (B) 2,030	ND-1	30	20 [2.4]
Field Blank	ND [1.0]	ND [10]	18	ND [5]	ND-2	ND [0.005]

NOTES:

Sample Date: 08-27-91

Excavation Depth: 5' below ground surface.

Sample Depth: 6" below bottom of excavation.

B : Indicates the compound was also detected in the blank, but at levels less than 5x the detection limit. Values for this compound may be suspect.

ND: Analyte was analyzed for, but not detected.

[]: Detection limit

* : Library Search does not have detection limits.

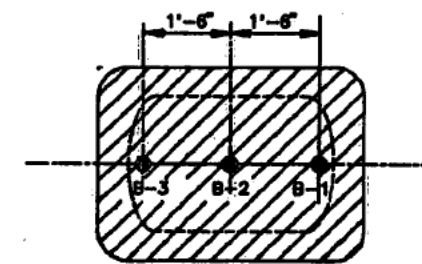
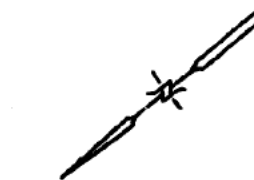
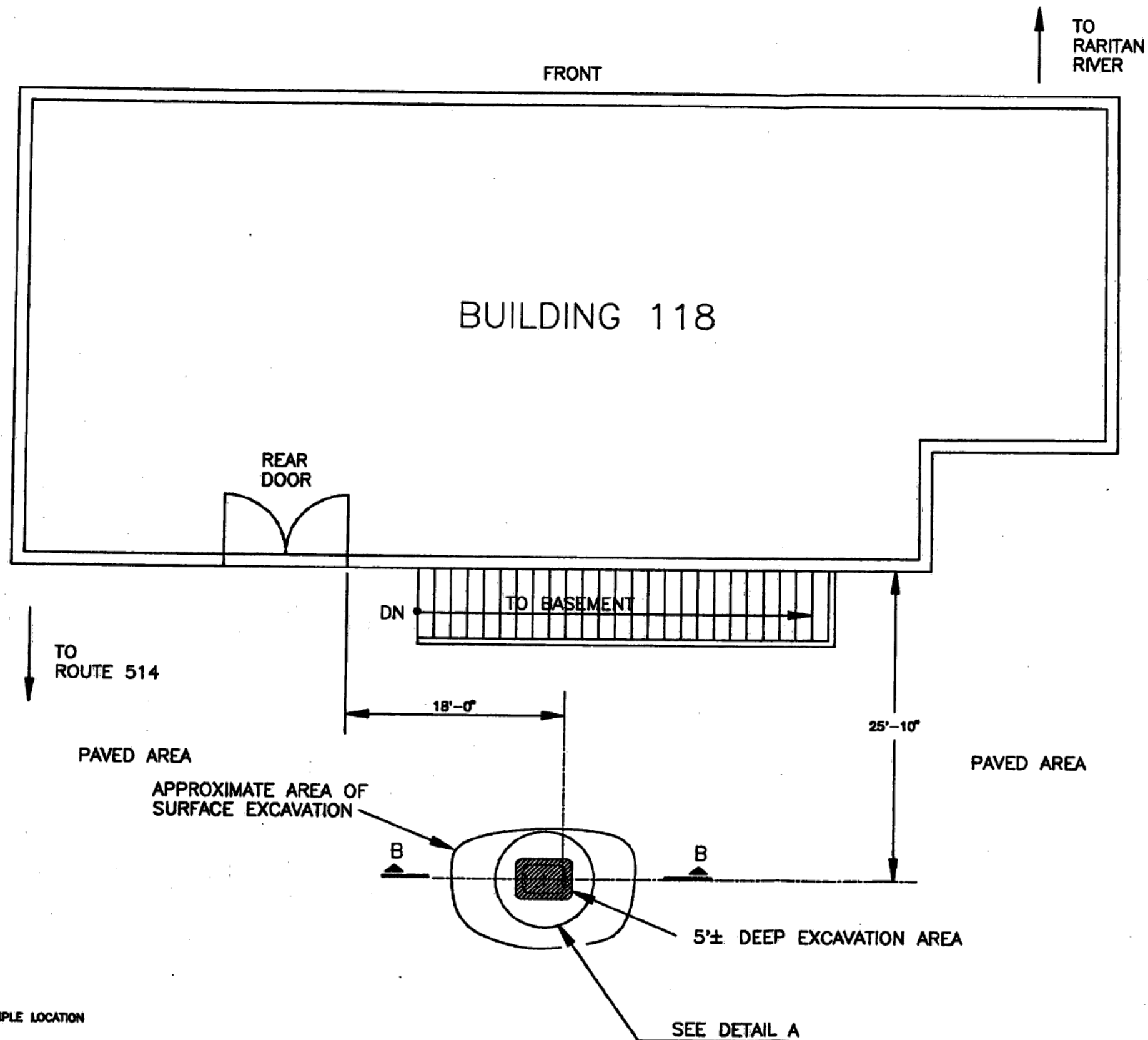
1 : Detection limit varied between 6 and 60, with the majority being 6.

2 : No non-targeted compounds found.

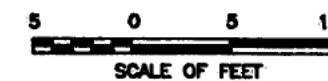
Numbers in bold are above NJDEPE Guidelines

4.0 Conclusions and Future Actions

Based on the fact that the postexcavation analytical results were either non-detectable or below NJDEPE action levels, no further excavation was conducted or is planned near the former 112 gallon gasoline UST. According to the Closure Guidelines, a monitoring well is required because the UST stored gasoline. Due to the presence of unexcavated ordnance, a monitoring well cannot be installed until after June 1, 1992. Groundwater analytical results will be included in the DICAR report to be submitted to NJDEPE by September 30, 1992.



DETAIL A



LEGEND

- SAMPLE LOCATION
- B-1
- DEEP EXCAVATION AREA

NOTES:

1. ALL SAMPLES COLLECTED ON 8/27/91.
FROM 6" BELOW BASE OF EXCAVATION.
2. FOR SECTION B-B REFER TO FIGURE 2.

1	11/28/91	REDRAWN TO SCALE	J.R.D.	EC		
0	9/28/91	DEVELOPED DRAWING	DEM	EC	MSM	BM
REV.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPRD BY
PROJECT MANAGER:		B. MAGINN	DRAWN BY:		V. HANS	



**INTERNATIONAL
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CORPORATION**

FIGURE 1

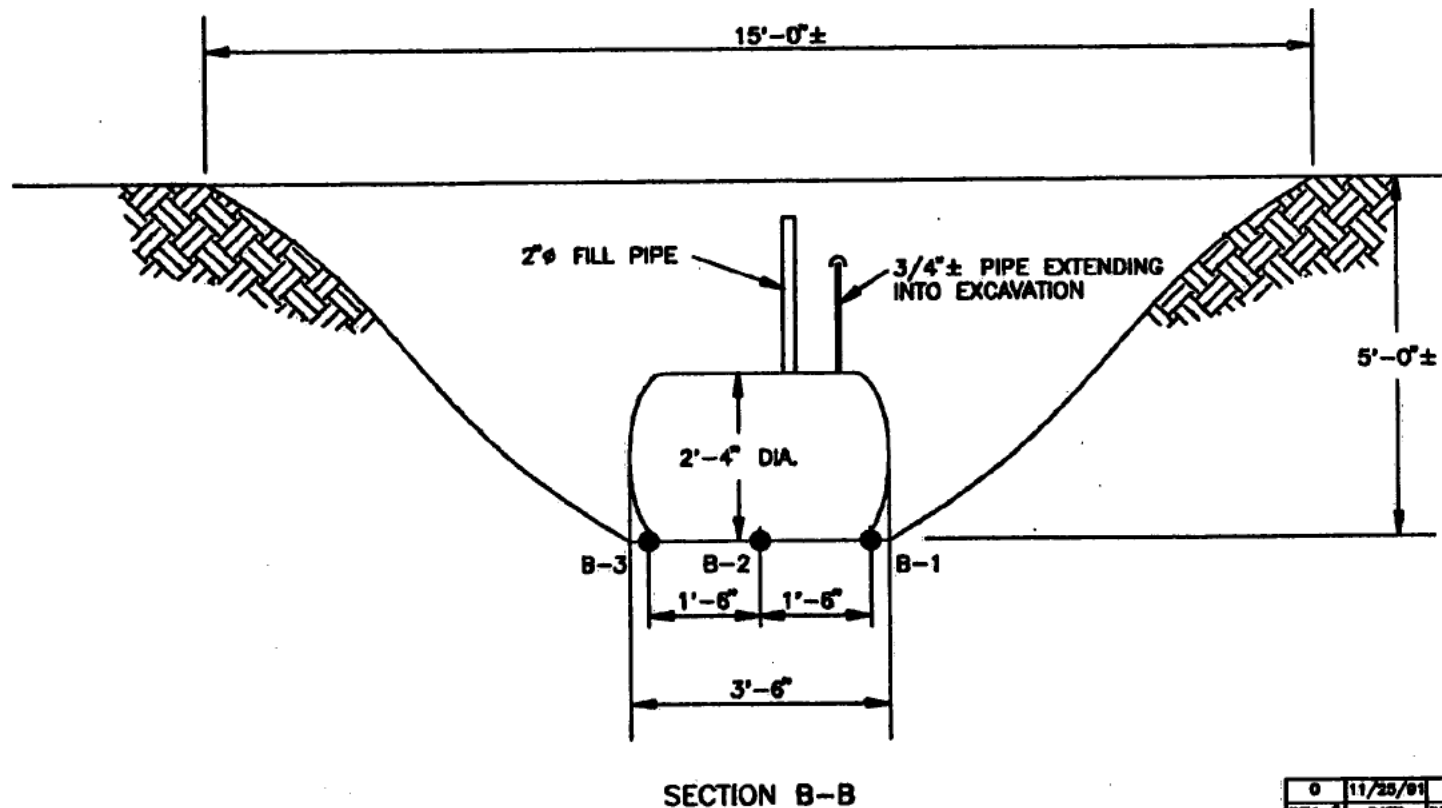
POSTEXCAVATION SAMPLE LOCATIONS

112 G. GASOLINE UST REMOVAL

Prepared For:

RARITAN ARSENAL
MIDDLESEX COUNTY COLLEGE
PROJECT No. 305788
NOVEMBER 1991

LAYER(S)	DATE INITIATED	DRAWING NUMBER
0	9/20/91	305788A1




SCALE: 3/8" = 1'-0"

LEGEND

B-1 ● SAMPLE LOCATION

NOTES:

1. ALL SAMPLES COLLECTED ON 8/27/91.
2. GROUNDWATER NOT ENCOUNTERED.
3. SOIL IS SANDY WITH SMALL QUANTITIES OF SILT AND CLAY.
4. SECTION B-B TAKEN FROM FIGURE 1.

0	11/28/91	DEVELOPED DRAWING	J.R.D.	E.C.	J.M.
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY APPVD BY
PROJECT MANAGER: B. MAGINN			DRAWN BY: J.R. DANZA		
 INTERNATIONAL TECHNOLOGY CORPORATION					
FIGURE 2 CROSS SECTIONAL VIEW 112 G. GASOLINE UST REMOVAL Prepared For: RARITAN ARSENAL MIDDLESEX COUNTY COLLEGE PROJECT No. 305788 NOVEMBER 1991					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		11/28/91		305788-B	

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
BUREAU OF UNDERGROUND STORAGE TANKS
TANK MANAGEMENT SECTION

CN 029, 401 EAST STATE STREET
TRENTON, N.J. 08625-0029

FOR STATE USE ONLY

UST # _____
Date Rec'd _____
TMS # _____
Staff _____

**UNDERGROUND STORAGE TANK
SITE ASSESSMENT SUMMARY**

*Under the provisions of the Underground Storage
of Hazardous Substances Act
in accordance with N.J.A.C. 7:14B*

This Summary form shall be used by all owners and operators of Underground Storage Tank Systems (USTS) who have either reported a release and are subject to the site assessment requirements of N.J.A.C. 7:14B-8.2 or who have closed USTs pursuant to N.J.A.C. 7:14B-9.1 et seq. and are subject to the site assessment requirements of N.J.A.C. 7:14B-9.2 and 9.3.

INSTRUCTIONS

- Please print legibly or type.
- Fill in all applicable blanks. This form will require various attachments in order to complete the Summary. The technical guidance document, Interim Closure Requirements for USTs, explains the regulatory (and technical) requirements for closure and the Scope of Work, Investigation and Corrective Action Requirements for Discharges from Underground Storage Tanks and Piping Systems explains the regulatory (and technical) requirements for corrective action.
- Return one original of the form and all required attachments to the above address.
- Attach a scaled site diagram of the subject facility which shows the information specified in Item IV B of this form.
- Explain any "No" or "N/A" response on a separate sheet.

Date of Submission November 27, 1991

0119829

FACILITY REGISTRATION

I. FACILITY NAME AND ADDRESS

Middlesex County College

155 Mill Road - P.O. Box 3050

Edison, New Jersey

County Middlesex

Telephone No. (908) 906-2568

OWNER'S NAME AND ADDRESS, if different from above

U.S. Army Corps of Engineers

Former Raritan Arsenal

P.O. Box 6433, Edison New Jersey 08818-6433

Telephone No. (908) 603-9517

II. DISCHARGE REPORTING REQUIREMENTS

A. Was contamination found? ☒ Yes ☐ No ☐ Yes, Case No. 91-08-22-1645
(Note: All discharges must be reported to the Environmental Action Hotline (800) 292-7172)

B. The substance(s) discharged was(were) old gasoline

C. Have any vapor hazards been mitigated? ☐ Yes ☐ No ☐ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. _____

The site assessment requirements associated with tank decommissioning are explained in the Technical Guidance Document, Interim Closure Requirements for USTs, Section V. A-D. Attach complete documentation of the methods used and the results obtained for each of the steps of the decommissioning used. Please include a site map which shows the locations of all samples and borings, the location of all tanks and piping runs at the facility at the beginning of the tank closure operation and annotated to differentiate the status of all tanks and piping (e.g., removed, abandoned, temporarily closed, etc.). The same site map can be used to document other parts of the site assessment requirements, if it is properly and legibly annotated.

IV. SITE ASSESSMENT REQUIREMENTS

A. Excavated Soil

Any evidence of contamination in excavated soil will require that the soil be classified as either Hazardous Waste or Non-Hazardous Waste. Please include all required documentation of compliance with the requirements for handling contaminated excavated soil (if any was present) as explained in the technical guidance documents for closure and corrective action. Describe amount of soil removed, its classification, and disposal location.

B. Scaled Site Diagrams

1. Scaled site diagrams must be attached which include the following information:

- North arrow and scale
- The locations of the ground water monitoring wells
- Location and depth of each soil sample and boring
- All major surface and sub-surface structures and utilities
- Approximate property boundaries
- All existing or closed underground storage tank systems, including appurtenant piping
- A cross-sectional view indicating depth of tank, stratigraphy and location of water table
- Locations of surface water bodies

C. Soil samples and borings (check appropriate answer)

- Were soil samples taken from the excavation as prescribed? ☒ Yes ☐ No ☐ N/A
- Were soil borings taken at the tank system closure site as prescribed? ☒ Yes ☐ No ☐ N/A
- Attach the analytical results in tabular form and include the following information about each sample
 - Customer sample number (keyed to the site map)
 - The depth of the soil sample
 - Soil boring logs
 - Method detection limit of the method used
 - QA/QC information as required

*See 11/91 closure report.

D. Ground Water Monitoring

1. Number of ground water monitoring wells installed 0

2. Attach the analytical results of the ground water samples in tabular form. Include the following information for each sample from each well:

- Site diagram number for each well installed
- Depth of ground water surface
- Depth of screened interval
- Method detection limit of the method used
- Well logs
- Well permit numbers
- QA/QC information as required

*Unable to install wells due to unexcavated ordnance. See 11-27-91 coverletter to 11/91 closure report.

V. SOIL CONTAMINATION

A. Was soil contamination found? X Yes No
If "Yes", please answer Question B-E
If "No", please answer Question B

B. The highest soil contamination still remaining in the ground has been determined to be:

- Non-Detect ppb total STEX, 30 ppb total non-targeted VOC
- Non-Detect ppb total B/N, 62.0 ppb total non-targeted B/N
- Non-Detect ppm TPHC
- ppb (for non-petroleum substance)

C. Remediation of free product contaminated soils

- All free product contaminated soil on the property boundaries and above the water table are believed to have been removed from the subsurface X Yes No
- Free product contaminated soils are suspected to exist below the water table Yes X No
- Free product contaminated soils are suspected to exist off the property boundaries. Yes No

D. Was the vertical and horizontal extent of contamination determined? X Yes No N/A

E. Does soil contamination intersect ground water? Yes X No N/A

VI. GROUND WATER CONTAMINATION

A. Was ground water contamination found? Yes * No
If "Yes", please answer Questions B-G.
If "No", please answer only Question B. *Not able to install wells due to unexcavated ordnance. See coverletter closure report.

B. The highest ground water contamination at any 1 sampling location and at any 1 sampling event to date has been determined to be:

- ppb total STEX, ppb total non-targeted VOC
- ppb total B/N, ppb total non-targeted B/N
- ppb total MTBE, ppb total TBA
- ppb (for non-petroleum substance)
- greatest thickness of separate phase product found
- separate phase product has been delineated : Yes No N/A

C. Result(s) of well search

- A well search (including a review of manual well records) indicates that private, municipal or commercial wells do exist within the distances specified in the Scope of Work. Yes No X N/A
- The number of these wells identified is

D. Proximity of wells and contaminant plume N/A

1. The shallowest depth of any well noted in the well search which may be in the horizontal or vertical potential path(s) of the contaminant plume(s) is _____ feet below grade (consideration has been given for the effects of pumping, subsurface structures, etc. on the direction(s) of contaminant migration) This well is _____ feet from the source and its screening begins at a depth of _____ feet.
2. The shallowest depth to the top of the well screen for any well in the potential path of the plume(s) (as described in D1 above) is _____ feet below grade. This well is located _____ feet from the source
3. The closest horizontal distance of a private, commercial or municipal well in the potential path of the plume (as determined in D1) is _____ feet from the source. This well is _____ feet deep and screening begins at a depth of _____ feet.

E. A plan for separate phase product recovery has been included. ☐ Yes ☐ No ☒ N/A

F. A ground water contour map has been submitted which includes the ground water elevations for each well.
☐ Yes ☐ No ☒ N/A

G. Delineation of contamination

1. The ground water contaminants have been delineated to MCLs or lower values at the property boundaries. ☐ Yes ☐ No
2. The plume is suspected to continue off the property at concentrations greater than MCLs.
☐ Yes ☐ No
3. Off property access (circle one): ☐ is being sought ☐ has been approved ☐ has been denied

VII: SITE ASSESSMENT CERTIFICATION [preparer of site assessment plan - N.J.A.C. 7:14B-8.3(b) & 9.5(a)(3);

The person signing this certification as the "Qualified Ground Water Consultant" (as defined in N.J.A.C. 7:14B-1.6) responsible for the design and implementation of the site assessment plan as specified in N.J.A.C. 7:14B-8.3(a) & 9.2(b)(2), must supply the name of the certifying organization and certification number.

"I certify under penalty of law that the information provided in this document is true, accurate, and complete and was obtained by procedures in compliance with N.J.A.C. 7:14B-8 and 9. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Barbara Maginn

SIGNATURE *B. Maginn*

COMPANY NAME IT Corporation
(Preparer of Site Assessment Plan)

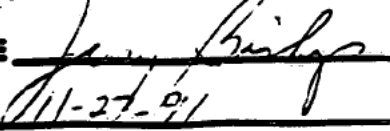
DATE 11/26/91

CERTIFYING ORGANIZATION N.J. Professional Engineer

CERTIFICATION NUMBER GE34387

VIII. **TANK DECOMMISSIONING CERTIFICATION** [person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)(4)]

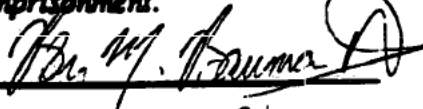
"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Jerry Bishop SIGNATURE 
COMPANY NAME IT Corporation DATE 11-27-91
(Performer of Tank Decommissioning)

IX. **CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY**

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(c)(1)].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

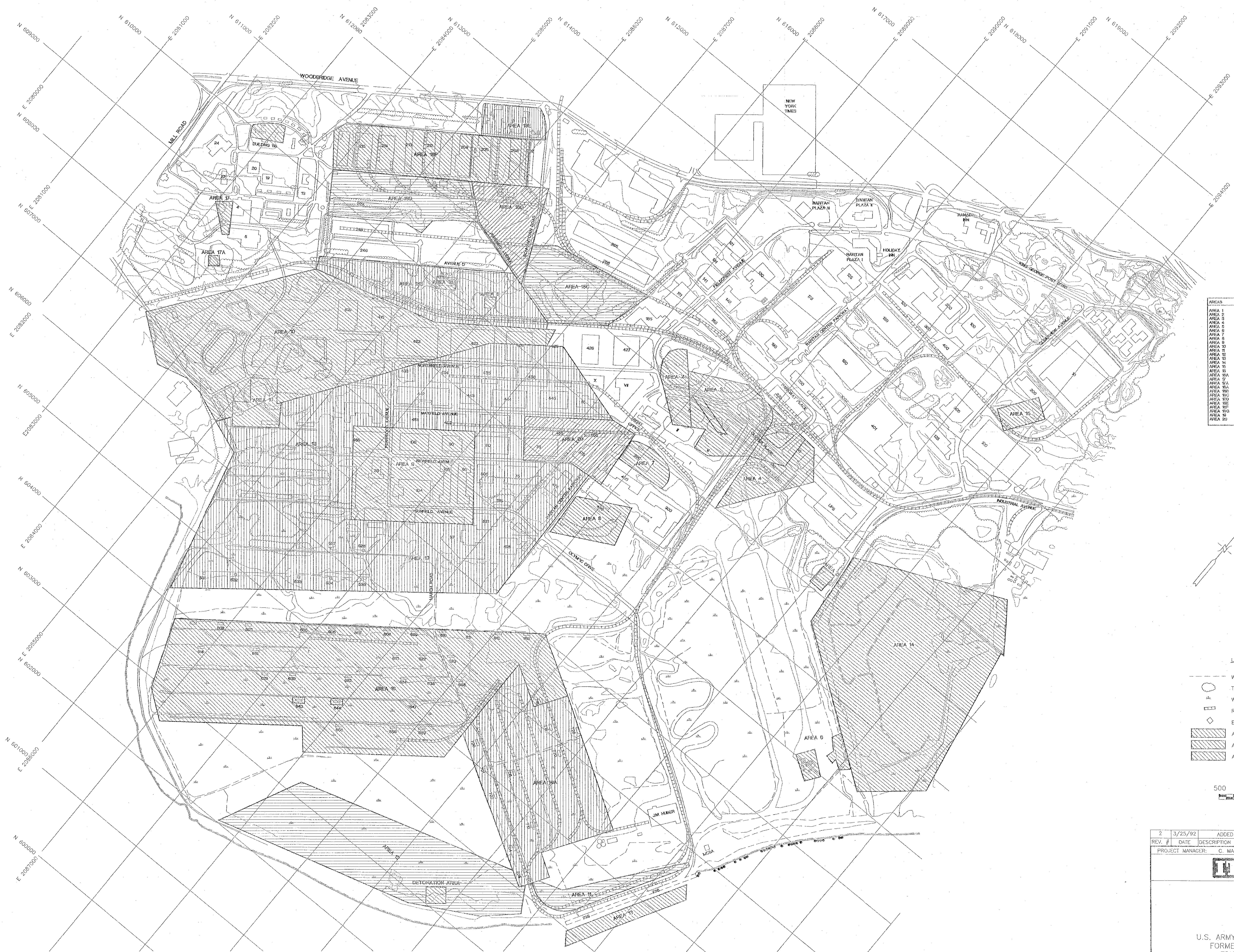
NAME (Print or Type) Major B. Bauman SIGNATURE 
COMPANY NAME U.S. Army Corps of Engineers DATE 26 Nov 91

B. The following certification shall be signed as follows [according to the requirements of N.J.A.C. 7:14B-2.3(C)(2)]: N/A

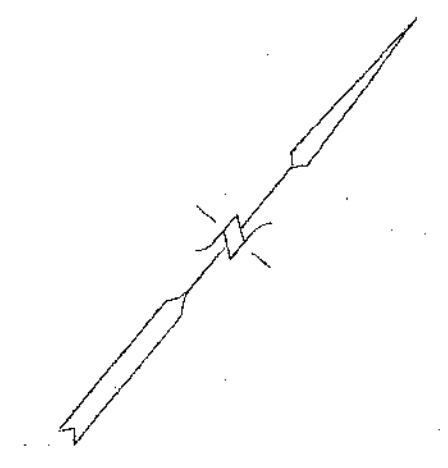
1. For a corporation, by a principal executive officer of at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

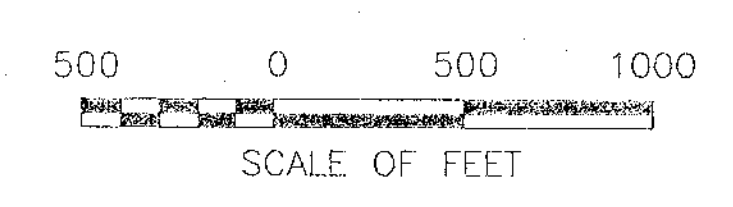
NAME (Print or Type) _____ SIGNATURE _____
COMPANY NAME _____ DATE _____



AREA	SQ. FT.	ACRES
AREA 1	24873.35	0.57
AREA 2	35563.53	0.81
AREA 3	50418.02	1.15
AREA 4	600078.50	13.78
AREA 5	60084.40	1.38
AREA 6	198721.03	4.56
AREA 7	505429.04	11.60
AREA 8	505432.95	11.60
AREA 9	222506.95	5.14
AREA 10	626901.92	14.39
AREA 11	453148.20	10.39
AREA 12	367296.20	8.43
AREA 13	367296.20	8.43
AREA 14	8408078.45	193.13
AREA 15	199851.34	4.56
AREA 16	8428880.34	193.53
AREA 17A	3620108.50	83.32
AREA 17	81578.42	1.87
AREA 18A	271847.23	6.22
AREA 18	47956.41	1.10
AREA 19	1271847.23	29.29
AREA 20	1323905.05	30.40
AREA 21	1323905.05	30.40
AREA 22	405818.55	9.32
AREA 23	167892.26	3.82
AREA 24	902213.08	20.71
AREA 25	1276952.61	29.30
AREA 26	1009957.18	23.18



- LEGEND:
- WATERWAY
 - TREE AREA
 - WETLAND
 - RAILROAD
 - BUILDING
 - AREA UNDER WORK
 - AREA COMPLETED
 - AREA OF CONCERN



2	3/25/92	ADDED GRID	R.K.R.		
REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY/APPD BY
PROJECT MANAGER:		C. MAGLSON		DRAWN BY: M.S.M./R.K.R.	
SITE MAP					
Prepared For:					
U.S. ARMY CORPS OF ENGINEERS					
FORMER RARITAN ARSENAL					
EDISON, NEW JERSEY					
JANUARY 1992					
LAYER(S)		DATE INITIATED		DRAWING NUMBER	
0		--/--/--		SITEMAP.DWG	

SOURCE:
SAILER & SAILER, INC. ENGINEERS-LAND SURVEYORS
GENERAL SITE PLAN, FORMER RARITAN ARSENAL



Date Rec'd. _____
 Auth. _____
 Routing _____
 UST NO. _____

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
 CN 629
 TRENTON, NEW JERSEY 08636
 ATTN: BUST Program
 (609) 984-3156

STANDARD REPORTING FORM
 for the:

Installation/Abandon/Remove/Sale-Transfer/Substantial Modification

Circle Only One — Use One Form Per Activity

(More than one tank can be listed per tank activity)

Answer questions 1 through 5 and others as applicable.

1. Company name and address: (as it appears on registration questionnaire)

Middlesex County College

155 Mill Road

P.O. Box 3050

Edison, New Jersey 08818-3050

2. Facility name and location:
 (if different from above)

3. Contact person for this activity:

Major Ben Bauman

Telephone Number: (908) 603-9517

4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire: C1

5. Registration Number (if known): UST - 0119829

(OVER)

*Tank was not transferred with rest of property in 1963 when Middlesex County College purchased property from Department of the Army. Owner Mistakenly shown on 9-16-91 registration as Middlesex County College.

For TRANSFER OF OWNERSHIP:

New Company Name Department of the Army *
New Facility Name (Tank Removed 8-27-91)
Address P.O. Box 6433
Edison, New Jersey 08818-6433
New owner/operator (print) Major Ben Bauman
Signature *Ben M. Bauman*

7. For ABANDONMENT or REMOVAL:

- Describe the proposed procedure in detail on an attached sheet.
- Specify the product last stored in the tank: _____
- Date abandoned or removed _____
- Is Site Assessment Compliance Statement being completed? YES or NO Form MUST be completed and returned within 90 days of tank closure. (per 40 CFR 280.72)

8. For SUBSTANTIAL MODIFICATIONS:

- Describe the reason for the modification and, in detail, the proposed procedure to be used on an attached sheet.
- Specify the product presently stored in the tank: _____
- Specify the product to be stored in the tank: _____

9. For NEW OR REPLACEMENT INSTALLATIONS:

- Attach the specifications as required by the attached instructions.
- Specify the product (s) to be stored in the tank: _____

NOTE: All appropriate and applicable permits, licenses and certificates from any local, state and/or federal agency must be obtained separately from this notification as required by the above stated activity. **CERTIFICATION**

*** This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility. (7:14B-2.3 (a) 1). ***

"I certify under penalty of law that the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment."

Signature: *Ben M. Bauman*

Name (print or type): BEN M. BAUMAN II

Title: Project Manager Date: 26 Nov 1991

CERTIFICATE OF ANALYSIS

Raritan Arsenal
c/o IT Corp.
165 Fieldcrest Ave.
Edison, NJ 08837

Date: September 17, 1991

Attn: Ms. Barbara Maginn

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 082691-B


This is the Certificate of Analysis for the following samples:

Client Project ID: Soil
Date Received: 08/27/91
Number of Samples: 4
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
FIELD BLANK	F1-09-007-01
BLDG. 118-B1	F1-09-007-02
BLDG. 118-B2	F1-09-007-03
BLDG. 118-B3	F1-09-007-04

Reviewed and Approved:


Patrick B. Brown
Project Manager

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

SAMPLE ID	FIELD BLANK	BLDG. 118-B1	BLDG. 118-B2	
SAMPLED	08/27/91	08/27/91	08/27/91	
TEST				UNITS
Petroleum Hydrocarbons	ND [1.0]			mg/L
Petroleum Hydrocarbons		ND [22]	ND [24]	mg/Kg Dry Wt.
Total Solids		90 [0.01]	83 [0.01]	Percent

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

SAMPLE ID	BLDG. 118-B3	
SAMPLED	08/27/91	
TEST		UNITS
Petroleum	ND	mg/Kg Dry Wt.
Hydrocarbons	[24]	
Total Solids	84	Percent
	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Page: 4

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Metals

SAMPLE ID: FIELD BLANK
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 09/04/91

	Results in	<u>mg/L</u>	Detection Limit
Lead		<u>ND</u>	<u>0.005</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: FIELD BLANK

SAMPLE DATE: 08/27/91

ANALYSIS DATE: 08/31/91

	Results in <u>ug/L</u>	Detection Limit
Acenaphthene	ND	10
Acenaphthylene	ND	10
Anthracene	ND	10
Benzidine	ND	10
Benzo(a)Anthracene	ND	10
Benzo(b)Fluoranthene	ND	10
Benzo(k)Fluoranthene	ND	10
Benzo(a)Pyrene	ND	10
Benzo(g,h,i)perylene	ND	10
bis(2-Chloroethyl)Ether	ND	10
bis(2-Chloroethoxy)Methane	ND	10
bis(2-Ethylhexyl)Phthalate	ND	10
bis(2-Chloroisopropyl)Ether	ND	10
4-Bromophenyl Phenyl Ether	ND	10
Butyl Benzyl Phthalate	ND	10
2-Chloronaphthalene	ND	10
4-Chlorophenyl Phenyl Ether	ND	10
Chrysene	ND	10
Dibenzo(a,h)anthracene	ND	10
Di-n-butylphthalate	ND	10
1,2-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
3,3'-Dichlorobenzidine	ND	10
Diethylphthalate	ND	10
Dimethylphthalate	ND	10
2,4-Dinitrotoluene	ND	10
2,6-Dinitrotoluene	ND	10
Di-n-Octylphthalate	ND	10
1,2-Diphenylhydrazine	ND	10
Fluoranthene	ND	10
Fluorene	ND	10
Hexachlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Hexachloroethane	ND	10

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: FIELD BLANK

SAMPLE DATE: 08/27/91

Hexachlorocyclopentadiene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Isophorone	ND	10
Naphthalene	ND	10
Nitrobenzene	ND	10
N-nitroso-dimethylamine	ND	10
N-Nitrosodipropylamine	ND	10
N-Nitrosodiphenylamine	ND	10
Phenanthrene	ND	10
Pyrene	ND	10
1,2,4-Trichlorobenzene	ND	10

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Volatile Organics

SAMPLE ID: FIELD BLANK
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 08/28/91

Results in	ug/L	Detection Limit
Acrolein	ND	50
Acrylonitrile	ND	50
Benzene	ND	5
Bromoform	ND	5
Bromomethane	ND	5
Carbon Tetrachloride	ND	5
Chlorobenzene	ND	5
Chlorodibromomethane	ND	5
Chloroethane	ND	5
2-Chloroethylvinyl Ether	ND	5
Chloroform	ND	5
Chloromethane	ND	5
Dichlorobromomethane	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethane	ND	5
1,1-Dichloroethene	ND	5
1,2-Dichloroethene	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
trans-1,3-Dichloropropene	ND	5
Ethylbenzene	ND	5
Methylene Chloride	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Tetrachloroethene	ND	5
Toluene	ND	5
1,1,1-Trichloroethane	ND	5
1,1,2-Trichloroethane	ND	5
Trichloroethene	ND	5
Trichlorofluoromethane	ND	5
Vinyl Chloride	ND	5
Xylenes	ND	10

Comments: ND indicates the compound is not detected at the level indicated.

Page: 8

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search Base Neutrals

SAMPLE ID: FIELD BLANK
SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/L)
Unknown	<u>192</u>	<u>18</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search for VOA's

SAMPLE ID: FIELD BLANK

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/L)
No non-targeted compounds found	_____	_____

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Metals

SAMPLE ID: BLDG. 118-B1
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 09/05/91

	Results in <u>mg/Kg</u> Dry Wt.	Detection Limit
Lead	<u>24</u>	<u>2.2</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
 Date: September 17, 1991
 Client Job No.: 305788

IT ANALYTICAL SERVICES
 EDISON, NJ
 (201) 225-2000
 Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B1
 SAMPLE DATE: 08/27/91
 ANALYSIS DATE: 09/06/91

Results in	<u>ug/Kg</u> Dry Wt.	Detection Limit
Acenaphthene	ND	370
Acenaphthylene	ND	370
Anthracene	ND	370
Benzidine	ND	370
Benzo(a)Anthracene	ND	370
Benzo(b)Fluoranthene	ND	370
Benzo(k)Fluoranthene	ND	370
Benzo(a)Pyrene	ND	370
Benzo(g,h,i)perylene	ND	370
bis(2-Chloroethyl)Ether	ND	370
bis(2-Chloroethoxy)Methane	ND	370
bis(2-Chloroisopropyl)Ether	ND	370
bis(2-Ethylhexyl)Phthalate	ND	370
4-Bromophenyl Phenyl Ether	ND	370
Butyl Benzyl Phthalate	ND	370
2-Chloronaphthalene	ND	370
4-Chlorophenyl Phenyl Ether	ND	370
Chrysene	ND	370
Dibenzo(a,h)anthracene	ND	370
Di-n-butylphthalate	ND	370
1,2-Dichlorobenzene	ND	370
1,3-Dichlorobenzene	ND	370
1,4-Dichlorobenzene	ND	370
3,3'-Dichlorobenzidine	ND	370
Diethylphthalate	ND	370
Dimethylphthalate	ND	370
2,4-Dinitrotoluene	ND	370
2,6-Dinitrotoluene	ND	370
Di-n-Octylphthalate	ND	370
1,2-Diphenylhydrazine	ND	370
Fluoranthene	ND	370
Fluorene	ND	370
Hexachlorobenzene	ND	370
Hexachlorobutadiene	ND	370
Hexachloroethane	ND	370

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B1

SAMPLE DATE: 08/27/91

Hexachlorocyclopentadiene	<u>ND</u>	<u>370</u>
Indeno(1,2,3-cd)pyrene	<u>ND</u>	<u>370</u>
Isophorone	<u>ND</u>	<u>370</u>
Naphthalene	<u>ND</u>	<u>370</u>
Nitrobenzene	<u>ND</u>	<u>370</u>
N-nitroso-dimethylamine	<u>ND</u>	<u>370</u>
N-Nitrosodipropylamine	<u>ND</u>	<u>370</u>
N-Nitrosodiphenylamine	<u>ND</u>	<u>370</u>
Phenanthrene	<u>ND</u>	<u>370</u>
Pyrene	<u>ND</u>	<u>370</u>
1,2,4-Trichlorobenzene	<u>ND</u>	<u>370</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Volatile Organics

SAMPLE ID: BLDG. 118-B1
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 08/30/91

Results in	<u>ug/Kg</u> Dry Wt.	Detection Limit
Acrolein	ND	60
Acrylonitrile	ND	60
Benzene	ND	6
Bromoform	ND	6
Bromomethane	ND	6
Carbon Tetrachloride	ND	6
Chlorobenzene	ND	6
Chlorodibromomethane	ND	6
Chloroethane	ND	6
2-Chloroethylvinyl Ether	ND	6
Chloroform	ND	6
Chloromethane	ND	6
Dichlorobromomethane	ND	6
1,1-Dichloroethane	ND	6
1,2-Dichloroethane	ND	6
1,1-Dichloroethene	ND	6
1,2-Dichloroethene	ND	6
1,2-Dichloropropane	ND	6
cis-1,3-Dichloropropene	ND	6
trans-1,3-Dichloropropene	ND	6
Ethylbenzene	ND	6
Methylene Chloride	ND	6
1,1,2,2-Tetrachloroethane	ND	6
Tetrachloroethene	ND	6
Toluene	ND	6
1,1,1-Trichloroethane	ND	6
1,1,2-Trichloroethane	ND	6
Trichloroethene	ND	6
Trichlorofluoromethane	ND	6
Vinyl Chloride	ND	6
Xylenes	ND	11

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
 Date: September 17, 1991
 Client Job No.: 305788

IT ANALYTICAL SERVICES
 EDISON, NJ
 (201) 225-2000
 Work Order: F1-09-007

TEST NAME: NBS Search Base Neutrals

SAMPLE ID: BLDG. 118-B1

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
Unknown	<u>154</u>	<u>2700B</u>
Unknown Alkane	<u>306</u>	<u>260</u>
Substituted Hexenedione	<u>331</u>	<u>510</u>
Unknown	<u>384</u>	<u>320</u>
Pyrene	<u>1315</u>	<u>130</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search for VOA's

SAMPLE ID: BLDG. 118-B1

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
No non-targeted compounds found	_____	_____

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Metals

SAMPLE ID: BLDG. 118-B2
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 09/05/91

	Results in <u>mg/Kg</u> Dry Wt.	Detection Limit
Lead	<u>28</u>	<u>2.4</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
 Date: September 17, 1991
 Client Job No.: 305788

IT ANALYTICAL SERVICES
 EDISON, NJ
 (201) 225-2000

Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B2

SAMPLE DATE: 08/27/91

ANALYSIS DATE: 09/06/91

Results in	ug/Kg Dry Wt.	Detection Limit
Acenaphthene	ND	400
Acenaphthylene	ND	400
Anthracene	ND	400
Benzidine	ND	400
Benzo(a)Anthracene	ND	400
Benzo(b)Fluoranthene	ND	400
Benzo(k)Fluoranthene	ND	400
Benzo(a)Pyrene	ND	400
Benzo(g,h,i)perylene	ND	400
bis(2-Chloroethyl)Ether	ND	400
bis(2-Chloroethoxy)Methane	ND	400
bis(2-Chloroisopropyl)Ether	ND	400
bis(2-Ethylhexyl)Phthalate	ND	400
4-Bromophenyl Phenyl Ether	ND	400
Butyl Benzyl Phthalate	ND	400
2-Chloronaphthalene	ND	400
4-Chlorophenyl Phenyl Ether	ND	400
Chrysene	ND	400
Dibenzo(a,h)anthracene	ND	400
Di-n-butylphthalate	ND	400
1,2-Dichlorobenzene	ND	400
1,3-Dichlorobenzene	ND	400
1,4-Dichlorobenzene	ND	400
3,3'-Dichlorobenzidine	ND	400
Diethylphthalate	ND	400
Dimethylphthalate	ND	400
2,4-Dinitrotoluene	ND	400
2,6-Dinitrotoluene	ND	400
Di-n-Octylphthalate	ND	400
1,2-Diphenylhydrazine	ND	400
Fluoranthene	ND	400
Fluorene	ND	400
Hexachlorobenzene	ND	400
Hexachlorobutadiene	ND	400
Hexachloroethane	ND	400

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B2

SAMPLE DATE: 08/27/91

Hexachlorocyclopentadiene	<u>ND</u>	<u>400</u>
Indeno(1,2,3-cd)pyrene	<u>ND</u>	<u>400</u>
Isophorone	<u>ND</u>	<u>400</u>
Naphthalene	<u>ND</u>	<u>400</u>
Nitrobenzene	<u>ND</u>	<u>400</u>
N-nitroso-dimethylamine	<u>ND</u>	<u>400</u>
N-Nitrosodipropylamine	<u>ND</u>	<u>400</u>
N-Nitrosodiphenylamine	<u>ND</u>	<u>400</u>
Phenanthrene	<u>ND</u>	<u>400</u>
Pyrene	<u>ND</u>	<u>400</u>
1,2,4-Trichlorobenzene	<u>ND</u>	<u>400</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Volatile Organics

SAMPLE ID: BLDG. 118-B2
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 08/30/91

Results in	<u>ug/Kg</u> Dry Wt.	Detection Limit
Acrolein	ND	60
Acrylonitrile	ND	60
Benzene	ND	6
Bromoform	ND	6
Bromomethane	ND	6
Carbon Tetrachloride	ND	6
Chlorobenzene	ND	6
Chlorodibromomethane	ND	6
Chloroethane	ND	6
2-Chloroethylvinyl Ether	ND	6
Chloroform	ND	6
Chloromethane	ND	6
Dichlorobromomethane	ND	6
1,1-Dichloroethane	ND	6
1,2-Dichloroethane	ND	6
1,1-Dichloroethene	ND	6
1,2-Dichloroethene	ND	6
1,2-Dichloropropane	ND	6
cis-1,3-Dichloropropene	ND	6
trans-1,3-Dichloropropene	ND	6
Ethylbenzene	ND	6
Methylene Chloride	ND	6
1,1,2,2-Tetrachloroethane	ND	6
Tetrachloroethene	ND	6
Toluene	ND	6
1,1,1-Trichloroethane	ND	6
1,1,2-Trichloroethane	ND	6
Trichloroethene	ND	6
Trichlorofluoromethane	ND	6
Vinyl Chloride	ND	6
Xylenes	ND	12

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search Base Neutrals

SAMPLE ID: BLDG. 118-B2

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
Unknown	<u>331</u>	<u>570</u>
Unknown	<u>385</u>	<u>490</u>
Unknown Alkene	<u>1397</u>	<u>120</u>
Substituted Hexanedioic Ester	<u>1458</u>	<u>180</u>
Dotriacontanol Isomer	<u>1603</u>	<u>170</u>
Unknown Alkane	<u>1690</u>	<u>180</u>
Unknown Alkane	<u>1806</u>	<u>200</u>
Substituted Ester	<u>1455</u>	<u>13000</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search for VOA's

SAMPLE ID: BLDG. 118-B2

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
Unknown	<u>22</u>	<u>11</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Metals

SAMPLE ID: BLDG. 118-B3
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 09/05/91

	Results in <u>mg/Kg</u> Dry Wt.	Detection Limit
Lead	<u>20</u>	<u>2.4</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B3
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 09/06/91

Results in	ug/Kg Dry Wt.	Detection Limit
Acenaphthene	ND	390
Acenaphthylene	ND	390
Anthracene	ND	390
Benzidine	ND	390
Benzo(a)Anthracene	ND	390
Benzo(b)Fluoranthene	ND	390
Benzo(k)Fluoranthene	ND	390
Benzo(a)Pyrene	ND	390
Benzo(g,h,i)perylene	ND	390
bis(2-Chloroethyl)Ether	ND	390
bis(2-Chloroethoxy)Methane	ND	390
bis(2-Chloroisopropyl)Ether	ND	390
bis(2-Ethylhexyl)Phthalate	ND	390
4-Bromophenyl Phenyl Ether	ND	390
Butyl Benzyl Phthalate	ND	390
2-Chloronaphthalene	ND	390
4-Chlorophenyl Phenyl Ether	ND	390
Chrysene	ND	390
Dibenzo(a,h)anthracene	ND	390
Di-n-butylphthalate	ND	390
1,2-Dichlorobenzene	ND	390
1,3-Dichlorobenzene	ND	390
1,4-Dichlorobenzene	ND	390
3,3'-Dichlorobenzidine	ND	390
Diethylphthalate	ND	390
Dimethylphthalate	ND	390
2,4-Dinitrotoluene	ND	390
2,6-Dinitrotoluene	ND	390
Di-n-Octylphthalate	ND	390
1,2-Diphenylhydrazine	ND	390
Fluoranthene	ND	390
Fluorene	ND	390
Hexachlorobenzene	ND	390
Hexachlorobutadiene	ND	390
Hexachloroethane	ND	390

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Base Neutrals

SAMPLE ID: BLDG. 118-B3

SAMPLE DATE: 08/27/91

Hexachlorocyclopentadiene	ND	390
Indeno(1,2,3-cd)pyrene	ND	390
Isophorone	ND	390
Naphthalene	ND	390
Nitrobenzene	ND	390
N-nitroso-dimethylamine	ND	390
N-Nitrosodipropylamine	ND	390
N-Nitrosodiphenylamine	ND	390
Phenanthrene	ND	390
Pyrene	ND	390
1,2,4-Trichlorobenzene	ND	390

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: Volatile Organics

SAMPLE ID: BLDG. 118-B3
SAMPLE DATE: 08/27/91
ANALYSIS DATE: 08/30/91

Results in	<u>ug/Kg</u> Dry Wt.	Detection Limit
Acrolein	ND	60
Acrylonitrile	ND	60
Benzene	ND	6
Bromoform	ND	6
Bromomethane	ND	6
Carbon Tetrachloride	ND	6
Chlorobenzene	ND	6
Chlorodibromomethane	ND	6
Chloroethane	ND	6
2-Chloroethylvinyl Ether	ND	6
Chloroform	ND	6
Chloromethane	ND	6
Dichlorobromomethane	ND	6
1,1-Dichloroethane	ND	6
1,2-Dichloroethane	ND	6
1,1-Dichloroethene	ND	6
1,2-Dichloroethene	ND	6
1,2-Dichloropropane	ND	6
cis-1,3-Dichloropropene	ND	6
trans-1,3-Dichloropropene	ND	6
Ethylbenzene	ND	6
Methylene Chloride	ND	6
1,1,2,2-Tetrachloroethane	ND	6
Tetrachloroethene	ND	6
Toluene	ND	6
1,1,1-Trichloroethane	ND	6
1,1,2-Trichloroethane	ND	6
Trichloroethene	ND	6
Trichlorofluoromethane	ND	6
Vinyl Chloride	ND	6
Xylenes	ND	12

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search Base Neutrals

SAMPLE ID: BLDG. 118-B3

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
Unknown	<u>155</u>	<u>4200B</u>
Unknown	<u>194</u>	<u>56000B</u>
Substituted Alkane	<u>214</u>	<u>330B</u>
Substituted Alkane	<u>224</u>	<u>390B</u>
Unknown	<u>287</u>	<u>1100B</u>
Unknown	<u>331</u>	<u>680</u>
Unknown Alkane Alcohol	<u>1602</u>	<u>140</u>
Unknown Alkane	<u>1690</u>	<u>250</u>
Unknown Alkane	<u>1806</u>	<u>250</u>
Unknown	<u>1959</u>	<u>230</u>
Unknown	<u>2028</u>	<u>480</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

TEST NAME: NBS Search for VOA's

SAMPLE ID: BLDG. 118-B3

SAMPLE DATE: 08/27/91

Tentatively Identified Compounds	Scan Number	Estimated Concentration (ug/Kg Dry Wt.)
Cyclohexane	<u>323</u>	<u>18</u>
Substituted Alkane	<u>345</u>	<u>6</u>
Substituted Alkane	<u>565</u>	<u>6</u>

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Metals

The analysis of metals is based on Method 200.7 from 40CFR, Part 136. Samples to be analyzed by flame AA or ICP are digested with hydrochloric and nitric acid. Furnace analysis requires nitric acid digestion and mercury samples are digested with nitric and sulfuric acid.

Lead, Arsenic, Selenium, Antimony and Thallium are analyzed by graphite furnace, Mercury by cold vapor AA and all other metals by flame AA or ICP.

Base/Neutral Extractable Organics - GC/MS (Water)

The analysis of base/neutral extractable organics is based on EPA Method 625. An aliquot of sample is serially extracted with methylene chloride at a pH greater than 11.0. The extracts are dried through sodium sulfate, concentrated and analyzed by mass spectroscopy.

Volatile Organics - GC/MS (Clean water)

For the analysis of volatile organics, EPA Methods 624 is used. An inert gas is bubbled through a sample contained in a specifically designed purging chamber. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared

Company: Raritan Arsenal
Date: September 17, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-09-007

spectrophotometer and concentrations are determined by direct comparison with standards.

Base/Neutral Extractable Organics - GC/MS (Solid)

The analysis of base/neutral extractable organics is based on Methods 3550 and 8270, Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition. The extraction method (SW-846, Method 3550) uses an aliquot of sample sonicated three times with methylene chloride. The extracts are combined, dried through sodium sulfate, concentrated and analyzed by mass spectroscopy.

Volatile Organics - GC/MS (Solid)

For the analysis of volatile organics in soils, SW-846, 3RD Edition, Method 8240 is employed. The volatile organic compounds are introduced into the gas chromatograph by the purge and trap method. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a mass spectrometer.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.
- MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery
- MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter
- RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Trobromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Surrogate Recoveries		
Method 8015	Water	Soil
Acetone	68-132	68-132

Herbicides**		
	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	

CERTIFICATE OF ANALYSIS

Raritan Arsenal
c/o IT Corp.
165 Fieldcrest Ave.
Edison, NJ 08837

Date: October 29, 1991

Attn: Ms. Barbara Maginn

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 082691-B

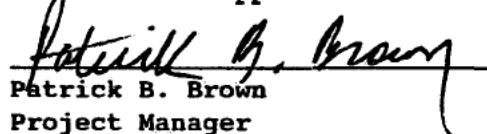
This is the Certificate of Analysis for the following samples:

Client Project ID: SOIL
Date Received: 10/23/91
Number of Samples: 4
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
B-1/0-6"/SOIL	F1-10-223-01
B-2/0-6"/SOIL	F1-10-223-02
B-3/0-6"/SOIL	F1-10-223-03
FIELD BLANK	F1-10-223-04

Reviewed and Approved:


Patrick B. Brown
Project Manager

Company: Raritan Arsenal
Date: October 29, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000

Work Order: F1-10-223

SAMPLE ID	B-1/0-6"/SOIL	B-2/0-6"/SOIL	B-3/0-6"/SOIL	
SAMPLED	10/23/91	10/23/91	10/23/91	
TEST				UNITS
Petroleum	ND	950	3900	mg/Kg Dry Wt.
Hydrocarbons	[24]	[480]	[480]	
Total Solids	85	83	84	Percent
	[0.01]	[0.01]	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
Date: October 29, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-10-223

SAMPLE ID	FIELD BLANK	
SAMPLED	10/23/91	
TEST		UNITS
Petroleum Hydrocarbons	ND [1.0]	mg/L

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
Date: October 29, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(201) 225-2000
Work Order: F1-10-223

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

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Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
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- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.
- MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery
- MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter
- RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries

MS Volatiles (624, 8240)	Water	Soil
1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries

GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Trobromophenol	10-123	19-122

Surrogate Recoveries

Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries

Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries

Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries

Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Method 8015	Water	Soil
Acetone	68-132	68-132

Herbicides**	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



INTERNATIONAL
TECHNOLOGY
CORPORATION

LOT #
9078

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

F110723

Reference Document No. 344405
Page 1 of ____

Project Name/No. 1 RARITAN ARSENAL Samples Shipment Date 7 10/23/91.
Sample Team Members 2 R. McMillian Lab Destination 8 ITAS, EDISON
Profit Center No. 3 3514 Lab Contact 9 R. Kocsis
Project Manager 4 LAPYAN CHAN Project Contact/Phone 12 225-2000 ^{Ext. 239}
Purchase Order No. 6 305788.29.01.001 Carrier/Waybill No. 13
Required Report Date: 11

Bill to: 5

Report to: 10

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time 16 Collected	Container 17 Type	Sample 18 Volume	Pre- 19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.
125281	B-1/0-6"/Soil	10/23/91 1500	Amber 350ml	250ml	NP	Petroleum Hydrocarbons TPHC	Good 8°C PY 10/23/91	
125282	B-2/0-6"/Soil	10/23/91 1570	↓	↓	↓	↓	↓	
125283	B-3/0-6"/Soil	10/23/91 1521	↓	↓	↓	↓	↓	
125283A	FIELD BLANK	10/23/91 1450	Amber 1x2000	1x2000	H ₂ SO ₄	TPHC	↓	
125285B	FIELD BLANK	10/23/91 1450	↓	1x2000	BP	BN+15	↓	

Special Instructions: 23

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26

Normal ☐ Rush ☒ 48hr. TAT

QC Level: 27

I ☐ II ☐ III ☐ Project Specific (specify):

1. Relinquished by 28 Rodney McMillian ITAS Date: 10/23/91
(Signature/Affiliation) Time: 1645

2. Relinquished by
(Signature/Affiliation) Date: _____
Time: _____

3. Relinquished by
(Signature/Affiliation) Date: _____
Time: _____

1. Received by 28 Rita Yount ITAS Ed Date: 10-23-91
(Signature/Affiliation) Time: 1645

2. Received by
(Signature/Affiliation) Date: _____
Time: _____

3. Received by
(Signature/Affiliation) Date: _____
Time: _____

Comments: 29 TPHC analysis for 48hr. TAT to determine which 2 samples need to be analyzed for BN+15

Write To accompany samples

Yellow: Field copy

* See back of form for special instructions.

CERTIFICATE OF ANALYSIS

Raritan Arsenal
c/o IT Corp.
165 Fieldcrest Ave.
Edison, NJ 08837

Date: November 11, 1991

Attn: Ms. Barbara Maginn

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 082691-B

This is the Certificate of Analysis for the following samples:

Client Project ID: SOIL
Date Received: 10/24/91
Number of Samples: 1
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
WASTE PILE AND 2 DRUM COMP	F1-10-232-01

Reviewed and Approved:


Patrick B. Brown
Project Manager

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

SAMPLE ID TEST	WASTE PILE AND 2 DRUM COMP 10/24/91	UNITS
Flash Point	Non-ignitable	Observation
Petroleum Hydrocarbons	ND [22]	mg/Kg Dry Wt.
Total Solids	89 [0.01]	Percent
Total Organic Halogen	ND [220]	mg/Kg Dry Wt.

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
 Date: November 11, 1991
 Client Job No.: 305788

IT ANALYTICAL SERVICES
 EDISON, NJ
 (908) 225-2000
 Work Order: F1-10-232

TEST NAME: PCB's

SAMPLE ID: WASTE PILE AND 2 DRUM COMP

SAMPLE DATE: 10/24/91

ANALYSIS DATE: 10/31/91

	Results in	<u>ug/Kg</u>	Detection
		Dry Wt.	Limit
Arochlor 1016		<u>ND</u>	<u>37</u>
Arochlor 1221		<u>ND</u>	<u>37</u>
Arochlor 1232		<u>ND</u>	<u>37</u>
Arochlor 1242		<u>ND</u>	<u>37</u>
Arochlor 1248		<u>ND</u>	<u>37</u>
Arochlor 1254		<u>ND</u>	<u>37</u>
Arochlor 1260		<u>ND</u>	<u>37</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

TEST NAME: Volatile Organics

SAMPLE ID: WASTE PILE AND 2 DRUM COMP
SAMPLE DATE: 10/24/91
ANALYSIS DATE: 10/29/91

Results in	<u>ug/Kg</u> Dry Wt.	Detection Limit
Benzene	<u>ND</u>	<u>1.1</u>
Ethylbenzene	<u>ND</u>	<u>1.1</u>
Toluene	<u>ND</u>	<u>1.1</u>
Total Xylenes	<u>ND</u>	<u>1.1</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

TEST NAME: Metals

SAMPLE ID: WASTE PILE AND 2 DRUM COMP
SAMPLE DATE: 10/24/91
ANALYSIS DATE: 11/07/91

	Results in <u>mg/Kg</u>	Detection
	Dry Wt.	Limit
Lead	<u>29</u>	<u>5.6</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

IA COMMENTARY

Blank spike recoveries for PCB-1016 did not meet QC acceptance criteria for WASTE PILE AND 2 DRUM COMP (F110232-01). Batch acceptance based upon matrix spike/duplicate recoveries.

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

PCB's (Soil)

The analysis of PCB's is based on Methods 8080 and 3550 of Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition. An aliquot of sample is diluted in hexane. The extract is then separated by gas chromatography and the analytes are measured using an electron capture detector.

Volatile Organics - GC (Soil)

For the analysis of volatile organics EPA Method 8020 of Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition is used. An inert gas is bubbled through a sample dispersed at 40 degrees C in water and the purgeables are efficiently transferred to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the purgeables which are then detected with a photoionization detector.

Total Organic Halogens

The analysis of total organic halogens (TOX) in liquid is based on Standard Methods, 16th Edition (506), the Dohrmann Manual and the EPA Manual, Volume 1C. The sample is absorbed on granular activated carbon and undergoes combustion at 800 degrees celsius. The amount of halide is quantified in a microcoulometric titration cell.

Metals

The analysis of metals is based on Method 200.7 from 40CFR, Part 136. Samples to be analyzed by flame AA or ICP are digested with hydrochloric and nitric acid. Furnace analysis requires nitric acid digestion and mercury samples are digested with nitric and sulfuric acid.

Company: Raritan Arsenal
Date: November 11, 1991
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F1-10-232

Lead, Arsenic, Selenium, Antimony and Thallium are analyzed by graphite furnace, Mercury by cold vapor AA and all other metals by flame AA or ICP.

Ignitability - Soils

A flame is introduced to an aliquot of sample at standard temperature and pressure. If the sample burns persistently and vigorously, it is considered to be ignitable.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.



INTERNATIONAL
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ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT CORPORATION
165 FIELDCREST AVENUE
EDISON NJ 08837
PAT BROWN

Date: 11/06/91

Work Order: B1-10-249

P.O. Number: L01534

This is the Certificate of Analysis for the following samples:

Client Work ID: RARITAN ARSENAL F110232 599990
Date Received: 10/26/91
Number of Samples: 1
Sample Type: SOIL

I. Introduction

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
W. PILE & 2DRUM F110232	B1-10-249-01

Reviewed and Approved:

Donnie Heinrich for
Donnie Heinrich
Western Regional Analytical Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: IT CORPORATION

Date: 11/06/91

Client Work ID: RARITAN ARSENAL F110232

599990

Work Order: B1-10-249

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Company: IT CORPORATION

Date: 11/06/91

Client Work ID: RARITAN ARSENAL F110232

599990

Work Order: B1-10-249

SAMPLE ID		W. PILE & 2DRUM		UNITS
SAMPLED		F110232		
TEST		10/24/91		
TOX	9020	ND [200]		mg/kg

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: IT CORPORATION

Date: 11/06/91

Client Work ID: RARITAN ARSENAL F110232

599990

Work Order: B1-10-249

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME TOX 9020

TEST CODE TOX

Total Organic
Halogen

Method 9020-Test Methods for Evaluating Solid Wastes,
3rd Edition, November 1986. Coulometric titration.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.

MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery

MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter

RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Tribromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Surrogate Recoveries		
Method 8015	Water	Soil
Acetone	68-132	68-132

Surrogate Recoveries		
Herbicides**	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



INTERNATIONAL
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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 30240
Page 1 of ____

Project Name/No. IT Edison 5999 90 Samples Shipment Date 7 10/25/91
Sample Team Members 2 Lab Destination 8 Austin
Profit Center No. 3 4614 Lab Contact 9 Paul Salcher
Project Manager 4 Pat Brown Project Contact/Phone 12 Pat Brown (908) 225-2000
Purchase Order No. 6 L01534 Carrier/Waybill No. 13
Required Report Date 11 11/15/91

Bill to: 5 ITAS Edison
165 Fieldcrest Ave
Edison NJ 08837
Report to: cc 10/25/91
Pat Brown
ITAS Edison
165 Fieldcrest Ave
Edison NJ 08837

ONE CONTAINER PER LINE

Sample Number ¹⁴	Sample Description/Type ¹⁵	Date/Time Collected ¹⁶	Container Type ¹⁷	Sample Volume ¹⁸	Pre-servative ¹⁹	Requested Testing Program ²⁰	Condition on Receipt ²¹	Disposal Record No. ²²
F110232-01C	Waste Pile & Drum Comp	10/24/91	120 ML G/A	120 ML	None	TOX	Good 402 10/26/91	

Special Instructions: 23 Analyze For TOX

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive ☐ (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐ QC Level: 27
I ☐ II ☐ III ☐ Project Specific (specify):

1. Relinquished by <u>28</u> (Signature/Affiliation) <u>John Vachl ITAS</u>	Date: <u>10-25-91</u> Time: <u>1730</u>	1. Received by <u>28</u> (Signature/Affiliation) <u>Therese IT</u>	Date: <u>10/26/91</u> Time: <u>0800</u>
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

Write: To accompany samples

Yellow: Field copy

* See back of form for special instructions.



INTERNATIONAL
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CORPORATION

ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD*

Reference Document No. 330238

Page 1 of 1

305788 29.01.001

Project Name/No. 1 RARITAN ARSENAL
Sample Team Members 2 A. Petrus
Profit Center No. 3 4614
Project Manager 4
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 10-24-91
Lab Destination 8 IT Edison
Lab Contact 9 Steve Voehl
Project Contact/Phone 12 (908) 225-2000 ext. 429
Carrier/Waybill No. 13

Bill to: 5

Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
132658 A	Waste pile and 2 Drum Comp.	10-23/24/91 1400 1130	Qt. GL.	950 ML	NONE	total lead / FPC / TOX PCBIS / total solids / Flashpoint	Good 8°C	
↓ B	↓	↓	60 ML	60 ML	↓	BTEX	FOR LAB USE ONLY	
↓ C	↓	↓	60 ML	60 ML	↓	BTEX	FOR LAB USE ONLY	

Special Instructions: 23 Lot #9091

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: 26

Normal ☒ Rush ☐

QC Level: 27

I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 George W. Petrus
(Signature/Affiliation)

Date: 10-24-91
Time: 3:1525

1. Received by 28 Steve Voehl ITAS
(Signature/Affiliation)

Date: 10-24-91
Time: 1525

2. Relinquished by
(Signature/Affiliation)

Date:
Time:

2. Received by
(Signature/Affiliation)

Date:
Time:

3. Relinquished by
(Signature/Affiliation)

Date:
Time:

3. Received by
(Signature/Affiliation)

Date:
Time:

Comments: 29

White: To accompany samples

Yellow: Field copy

* See back of form for special instructions.



INTERNATIONAL
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CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Raritan Arsenal
c/o IT Corp.
165 Fieldcrest Ave.
Edison, NJ 08837
Attn: Ms. Dolly Li

Date: March 20, 1992

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 305788-02


This is the Certificate of Analysis for the following samples:

Client Project ID: USACE - RARITAN ARSENAL
Date Received: 03/13/92
Number of Samples: 2
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
SOIL 135334	F2-03-155-01
SOIL MS	F2-03-155-02

Reviewed and Approved:



Ralph A. Kocsis
Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: Raritan Arsenal
Date: March 20, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ

(908) 225-2000

Work Order: F2-03-155

SAMPLE ID	SOIL 135334	SOIL MS	
SAMPLED	03/13/92	03/13/92	
TEST			UNITS
Total Solids	92 [0.01]		Percent
TCLP Extraction	03/17/92	03/17/92	Date

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: Raritan Arsenal
Date: March 20, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-03-155

TEST NAME: TCLP - Metals

SAMPLE ID: SOIL 135334
SAMPLE DATE: 03/13/92
TCLP EXTRACTION: 03/17/92
ANALYSIS DATE: 03/18/92

	Results in	<u>MG/L</u>	Detection Limit	Analysis Method
Lead (Pb)		<u>0.051</u>	<u>0.050</u>	<u>Furnace</u>

Comments: ND indicates the compound is not detected at the level indicated. Results have NOT been adjusted for matrix spike recoveries.

Company: Raritan Arsenal
Date: March 20, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-03-155

TEST NAME: TCLP - Metals

SAMPLE ID: SOIL MS
SAMPLE DATE: 03/13/92
TCLP EXTRACTION: 03/17/92
ANALYSIS DATE: 03/18/92

Results in % Rec

Lead (Pb) 82

Company: Raritan Arsenal
Date: March 20, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-03-155

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

TCLP - Metals

The analysis of metals is based on Method 200.7 from 40CFR, Part 136. Samples to be analyzed by flame AA or ICP are digested with hydrochloric and nitric acid. Furnace analysis requires nitric acid digestion and mercury samples are digested with nitric and sulfuric acid.

Lead, Arsenic, Selenium, Antimony and Thallium are analyzed by graphite furnace, Mercury by cold vapor AA and all other metals by flame AA or ICP.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids. In other words a sample is first weighed then subjected to temperatures of 103 degrees celsius for four hours after which the sample is re-weighed; the difference in the two weights being the % total solids.

TCLP Extraction

USEPA Method 1311-Federal Register Vol. 55, No. 61., March 29, 1990. Solid phase is extracted with a predetermined extraction fluid, based on alkalinity of the solid phase, equal to twenty times the weight of the solid phase.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.
- MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery
- MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter
- RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
m-x-toluene	88-110	81-117
p-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Trobromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8015	Water	Soil
Acetone	68-132	68-132

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Herbicides**		
	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 363598
Page 1 of ____

Project Name/No. 1 **USACE - Raritan Arsenal**
Sample Team Members 2 **Dolly Li**
Profit Center No. 3 **3811**
Project Manager 4 **Chick Magilson**
Purchase Order No. 6 **305788-02**
Required Report Date 11 **3/23/92**

Samples Shipment Date 7 **3/13/92**
Lab Destination 8 **IT-Edison**
Lab Contact 9 **Ralph Kocsis**
Project Contact/Phone 12 **Dolly Li (908)548-8777**
Carrier/Waybill No. 13

Bill to: 5 **P.O. BOX 5902
Edison, NJ 08818**

Report to: 10 **IT Corp Attn. Dolly Li
P.O. BOX 5902
Edison, NJ 08818**

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
135334	soil	3/13/92	glass jar	1602	None	TCLP Lead	good, no water f v	
	Lot # 10423							

Special Instructions: 23 **TCLP Lead (with matrix spike) at 1-wk rush!**

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☒ **One week**

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): **Certificate of Analysis**

1. Relinquished by 28 Dolly Li (Signature/Affiliation)	Date: 3/13/92 Time: 1630	1. Received by 28 Frank Dell DRS (Signature/Affiliation)	Date: 3-13-92 Time: 1630
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

White: To accompany samples
Yellow: Field copy
* See back of form for special instructions.



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

USACE
c/o IT Corporation
165 Fieldcrest Avenue
Edison NJ 08837
Attn: Ms. Dolli Li

Date: May 06, 1992

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 30578805


This is the Certificate of Analysis for the following samples:

Client Project ID: USACE
Date Received: 04/28/92
Number of Samples: 2
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
SOIL SAMPLE B-2	F2-04-258-01
SOIL SAMPLE B-3	F2-04-258-02

Reviewed and Approved:


Patrick B. Brown
Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: USACE
Date: May 06, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-04-258

SAMPLE ID	SOIL SAMPLE B-2	SOIL SAMPLE B-3	
SAMPLED	04/28/92	04/28/92	
TEST			UNITS
Petroleum	1700	54	mg/Kg Dry Wt.
Hydrocarbons	[240]	[24]	
Total Solids	84	84	Percent
	[0.01]	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: USACE
Date: May 06, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-04-258

IA COMMENTARY

Matrix spike / duplicate and replicate analyses for petroleum hydrocarbons could not be performed due to insufficient sample volume. A blank spike and blank spike duplicate were analyzed with the samples to meet QC requirements.

Company: USACE
Date: May 06, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-04-258

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids. In other words a sample is first weighed then subjected to temperatures of 103 degrees celsius for four hours after which the sample is re-weighed; the difference in the two weights being the % total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.

MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery

MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter

RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Trobromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Method 8015		
Acetone	Water	Soil
	68-132	68-132

Herbicides**		
2,4-DB	Water	Soil
	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

F204-258
Reference Document No. 371971
Page 1 of 1

Project Name/No. 1 USACE/305788
Sample Team Members 2 Dolly Li
Profit Center No. 3 25566 3811
Project Manager 4 Chick Magilson
Purchase Order No. 6
Required Report Date 11 1 week

Samples Shipment Date 7 4/28/92
Lab Destination 8 Edison IT Lab
Lab Contact 9 Ralph Kocsis
Project Contact/Phone 12 Dolly Li / 548-8777
Carrier/Waybill No. 13
Bill to: 5 P.O. Box 5902
IT Corp. - RA
Edison NJ 08818
Report to: 10 Dolly Li
IT - Edison
908-548-8777

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time 16 Collected	Container 17 Type	Sample 18 Volume	Pre- 19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.
131703	soil	4/28/92 11:00 am	glass bottle	1602	None	TPHC	Good p.p.	
131704	soil	4/28/92 11:00 am	glass bottle	1602	None	TPHC	✓	
							FOR LAB USE ONLY	

Special Instructions: 23 Please call Dolly Li when you get verbal results of TPHC by 72-hr TAT.

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☒ Archive ☐ (mos.)

Turnaround Time Required: 26

Normal ☐ Rush ☒ 72-hr Verbal results

QC Level: 27

I. ☒ II. ☐ III. ☐

Project Specific (Specify):

1. Relinquished by 28
(Signature/Affiliation)

Dolly Li

Date: 4/28/92
Time: 11:40 am

1. Received by 28
(Signature/Affiliation)

Ralph Kocsis ITAS-ED

Date: 4-28-92
Time: 11:40

2. Relinquished by
(Signature/Affiliation)

Date:
Time:

2. Received by
(Signature/Affiliation)

Date:
Time:

3. Relinquished by
(Signature/Affiliation)

Date:
Time:

3. Received by
(Signature/Affiliation)

Date:
Time:

Comments: 29

Lot # 10738

Yellow: Field copy

*See back of form for special instructions.



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

USACE
c/o IT Corporation
165 Fieldcrest Avenue
Edison NJ 08837
Attn: Ms. Dolli Li

Date: May 08, 1992

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 30578807

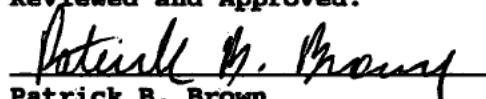
This is the Certificate of Analysis for the following samples:

Client Project ID: POST EXCAVATION SOIL SAMPLES
Date Received: 05/04/92
Number of Samples: 4
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
PS-1	F2-05-034-01
PS-2	F2-05-034-02
PS-3	F2-05-034-03
PS-4	F2-05-034-04

Reviewed and Approved:


Patrick B. Brown
Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: USACE
Date: May 08, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-05-034

SAMPLE ID	PS-1	PS-2	PS-3	
SAMPLED	05/04/92	05/04/92	05/04/92	
TEST				UNITS
Petroleum	21	ND	ND	mg/Kg Dry Wt.
Hydrocarbons	[21]	[22]	[21]	
Total Solids	94	92	95	Percent
	[0.01]	[0.01]	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: USACE
Date: May 08, 1992
Client Job No.: 305788

(908) 225-2000
Work Order: F2-05-034

SAMPLE ID	PS-4	
SAMPLED	05/04/92	
TEST		UNITS
Petroleum	ND	mg/Kg Dry Wt.
Hydrocarbons	[21]	
Total Solids	94	Percent
	[0.01]	

ND indicates the parameter was not detected.
Detection limits are specified in [].

Page: 4

Company: USACE
Date: May 08, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ

(908) 225-2000

Work Order: F2-05-034

IA COMMENTARY

Matrix spike / duplicate and replicate analyses for petroleum hydrocarbons could not be performed due to insufficient sample volume. A blank spike and blank spike duplicate were analyzed with the samples to meet QC requirements.

Company: USACE
Date: May 08, 1992
Client Job No.: 305788

(908) 225-2000
Work Order: F2-05-034

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids. In other words a sample is first weighed then subjected to temperatures of 103 degrees celsius for four hours after which the sample is re-weighed; the difference in the two weights being the % total solids.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.
- MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery
- MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter
- RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Tribromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorodate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Method 8015		
Acetone	Water	Soil
	68-132	68-132

Herbicides**		
2,4-DB	Water	Soil
	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



INTERNATIONAL
TECHNOLOGY
CORPORATION

**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD***

F-2-05 034

Reference Document No. 372001
Page 1 of 1

Project Name/No. 1 USACE/305188 Samples Shipment Date 7 5/4/92
Sample Team Members 2 Dolly Li / Jim Wagner Lab Destination 8 Edison Lab
Profit Center No. 3 3811 Lab Contact 9 Pat Brown
Project Manager 4 Chick Magilson Project Contact/Phone 12 Dolly Li / 548-8777
Purchase Order No. 6 _____ Carrier/Waybill No. 13 _____
Required Report Date 11 May 11, 1992

Bill to: 5 IT Corp - RA
P.O. Box 5902
Edison, N.J. 08818
Report to: 10 Dolly Li
IT Corp.
Edison, NJ 08837

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
135502	Postexcavation Soil Sample PS1	5-4-92 11:00am	16 oz glass jar	16oz	None	TPHC	Good PDS	
135503	" PS2	12:05pm	"	↓	↓	↓	FOR LAB USE ONLY	
135504	" PS3	12:55pm	"	↓	↓	↓	FOR LAB USE ONLY	
135505	" PS4	1400	"				FOR LAB USE ONLY	

Special Instructions: 23 Verbal report results in 72 hrs.

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25

Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required: 26

Normal ☐ Rush ☒ 1 week TAT

QC Level: 27

I ☒ II ☐ III ☐ Project Specific (specify) _____

1. Relinquished by 28 Dolly Li
(Signature/Affiliation)

Date: 5-4-92
Time: 1530

1. Received by 28 Theresa J. Della Torre
(Signature/Affiliation)

Date: 5-4-92
Time: 1530

2. Relinquished by
(Signature/Affiliation)

Date:
Time:

2. Received by
(Signature/Affiliation)

Date:
Time:

3. Relinquished by
(Signature/Affiliation)

Date:
Time:

3. Received by
(Signature/Affiliation)

Date:
Time:

Comments: 29

LOFT# 10794



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

USACE
c/o IT Corporation
165 Fieldcrest Avenue
Edison NJ 08837
Attn: Ms. Dolli Li

Date: May 19, 1992

NJ Lab Certification ID#: 12064

Job No.: 305788

P.O. Number: 30578806

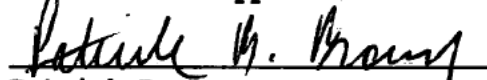
This is the Certificate of Analysis for the following samples:

Client Project ID: USACE
Date Received: 04/28/92
Number of Samples: 2
Sample Type: SOIL

I Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
WASTEPILE SOIL	F2-04-259-01
WASTEPILE SOIL MS	F2-04-259-02

Reviewed and Approved:


Patrick B. Brown
Project Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

SAMPLE ID	WASTEPILE SOIL	WASTEPILE SOIL MS	
SAMPLED	04/28/92	04/28/92	
TEST			UNITS
Ignitability	Non-ignitable		Observation
Petroleum Hydrocarbons	2300 [480]		mg/Kg Dry Wt.
pH	5.3 [0.01-14]		pH (Units)
Total Solids	84 [0.01]		Percent
TCLP Extraction	05/07/92	05/07/92	Date
Total Organic Halogen	ND [240]		mg/Kg Dry Wt.

ND indicates the parameter was not detected.
Detection limits are specified in [].

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

TEST NAME: Volatile Organics

SAMPLE ID: WASTEPILE SOIL

SAMPLE DATE: 04/28/92

ANALYSIS DATE: 04/29/92

	Results in	<u>ug/Kg</u>	Detection
	Dry Wt.		Limit
Benzene		<u>ND</u>	<u>1.2</u>
Ethylbenzene		<u>19</u>	<u>1.2</u>
Toluene		<u>3.6</u>	<u>1.2</u>
Total Xylenes		<u>120</u>	<u>1.2</u>

Comments: ND indicates the compound is not detected at the level indicated.

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ

(908) 225-2000

Work Order: F2-04-259

TEST NAME: PCB's

SAMPLE ID: WASTEPILE SOIL

SAMPLE DATE: 04/28/92

ANALYSIS DATE: 05/02/92

	Results in	<u>ug/Kg</u>	Detection
	Dry Wt.		Limit
Arochlor 1016		ND	46
Arochlor 1221		ND	46
Arochlor 1232		ND	46
Arochlor 1242		ND	46
Arochlor 1248		ND	46
Arochlor 1254		ND	46
Arochlor 1260		ND	46

Comments: ND indicates the compound is not detected at the level indicated.

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

TEST NAME: TCLP - Metals

SAMPLE ID: WASTEPILE SOIL

SAMPLE DATE: 04/28/92

TCLP EXTRACTION: 05/07/92

ANALYSIS DATE: 05/18/92

	Results in	mg/L	Detection Limit	Analysis Method
Lead (Pb)		ND	0.050	Furnace

Comments: ND indicates the compound is not detected at the level indicated. Results have NOT been adjusted for matrix spike recoveries.

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

IT ANALYTICAL SERVICES
EDISON, NJ
(908) 225-2000
Work Order: F2-04-259

IA COMMENTARY

Matrix spike / duplicate recoveries did not meet QC acceptance criteria for ethylbenzene and xylenes for WSTERPILE SOIL (F204259-01) due to matrix effects. Results were accepted on the basis of blank spike recoveries.

The sample underwent an acid wash and a TBA cleanup for PCB analysis.

pH analysis was requested on 5/12/92. The pH was analyzed on 5/12/92 which is thirteen days past holding time.

Matrix spike / duplicate recoveries did not meet QC acceptance criteria for lead for WASTEPILE SOIL (F204259-01) due to matrix effects. Results were accepted on the basis of blank spike recoveries.

TCLP - Metals Matrix Spike

TCLP Extraction: 05/07/92
Analysis Date: 05/18/92

Percent Recovery

Lead 74

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

II ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by Analytical test. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits. Detection limits may vary due to factors arising from concentration/dilution of the sample and sample matrix. ND denotes that the compound is not detected at or above the indicated detection limit. The methodologies for the analytical results requested are described below.

Volatile Organics - GC (Soil)

For the analysis of volatile organics EPA Method 8020 of Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition is used. An inert gas is bubbled through a sample dispersed at 40 degrees C in water and the purgeables are efficiently transferred to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. After purging is completed, the sorbent column is heated and backflushed with the inert gas to desorb the purgeables onto a gas chromatographic column. The gas chromatograph is temperature programmed to resolve the purgeables which are then detected with a photoionization detector.

PCB's (Soil)

The analysis of PCB's is based on Methods 8080 and 3550 of Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition. An aliquot of sample is sonicated three times with a 1:1 solution of methylene chloride/acetone and exchanged to hexane. The extracts are column cleaned and concentrated. The extract is then separated by gas chromatography and the analytes are measured using an electron capture detector.

Total Organic Halogens

The analysis of total organic halogens (TOX) in Soil is based on Test Methods for Evaluating Solid Waste, 3rd Edition, November 1986, Method 9020. Coulometric titration.

TCLP - Metals

The analysis of metals is based on Method 200.7 from 40CFR, Part 136. Samples to be analyzed by flame AA or ICP are digested with hydrochloric and nitric

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

acid. Furnace analysis requires nitric acid digestion and mercury samples are digested with nitric and sulfuric acid.

Lead, Arsenic, Selenium, Antimony and Thallium are analyzed by graphite furnace, Mercury by cold vapor AA and all other metals by flame AA or ICP.

Ignitability - Soils

A flame is introduced to an aliquot of sample at standard temperature and pressure. If the sample burns persistently and vigorously, it is considered to be ignitable.

Petroleum Hydrocarbons - IR

The analysis of petroleum hydrocarbons is based on EPA Method, 418.1. Water samples are prepared by separatory funnel liquid-liquid extraction using freon as the extracting solvent. Soils are prepared by soxhlet extraction using freon as the extracting solvent. Silica gel is added to remove interferences. Extracts are analyzed by infrared spectrophotometer and concentrations are determined by direct comparison with standards.

pH (Soil)

The analysis of pH is based on SW-846, 3rd Edition (9045). An aliquot of sample is diluted and mixed into deionized water. The intensity of the acidic or basic character of the solution at a specific temperature is determined by pH or hydrogen ion activity.

Total Solids

The analysis of total solids is based on Standard Methods, 16th Edition - (209F). A well mixed sample is evaporated in a weighed dish and dried to constant weight. The increase in weight over that of the empty dish represents the total solids. In other words a sample is first weighed then subjected to temperatures of 103 degrees celsius for four hours after which the sample is re-weighed; the difference in the two weights being the % total solids.

Company: USACE
Date: May 19, 1992
Client Job No.: 305788

(908) 225-2000

Work Order: F2-04-259

TCLP Extraction

USEPA Method 1311-Federal Register Vol. 55, No. 61., March 29, 1990. Solid phase is extracted with a predetermined extraction fluid, based on alkalinity of the solid phase, equal to twenty times the weight of the solid phase.

III QUALITY CONTROL

The Determinations were performed in accordance with EPA/NJDEP approved methodology.

DEFINITIONS

- ND(U) - Analyte was analyzed for, but not detected. The value given after the ND or U is the detection limit for that compound.
- A - The compound denoted with an "A" indicates a suspected aldol condensation product.
- B - Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect
- J - Indicates the compound was detected in the sample, but at levels less than the detection limit. Results should be regarded as estimated.
- MS - Matrix Spike ug/L - Micrograms/Liter %Rec - Percent Recovery
- MSD - Matrix Spike Duplicate ug/Kg - Micrograms/Kilogram mg/L - Milligrams/Liter
- RPD - Relative Percent Difference mg/Kg - Milligrams/Kilogram DL - Detection Limit

QUALITY CONTROL WINDOWS

Surrogate Recoveries		
GC/MS Volatiles (624, 8240)	Water	Soil
D4-1,2-dichloroethane	76-114	70-121
D8-toluene	88-110	81-117
4-Bromofluorobenzene	86-115	74-121

Surrogate Recoveries		
GC/MS SemiVolatiles (625, 8270)	Water	Soil
D5-Nitrobenzene	35-114	23-120
2-Fluorobiphenyl	43-116	30-115
D14-Terphenyl	33-141	18-137
D5-Phenol	10-94	24-113
2-Fluorophenol	21-100	25-121
2,4,6-Trobromophenol	10-123	19-122

Surrogate Recoveries		
Pesticides* (608, 8080)	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Dibutyl chlorendate	24-154	20-150

Surrogate Recoveries		
Method 602, BTEX, 8020	Water	Soil
4-Bromofluorobenzene	62-139	62-138

* SW846 allows one surrogate to be outside recovery windows.

Surrogate Recoveries		
Method 601 (8010)	Water	Soil
Bromochloromethane	74-121	74-121

Method 8015		
	Water	Soil
Acetone	68-132	68-132

Surrogate Recoveries		
Method 8060**	Water	Soil
Tetrachloro-m-xylene	60-150	60-150
Decachlorobiphenyl	60-150	60-150

Herbicides**		
	Water	Soil
2,4-DB	60-150	60-150

** Advisory Limits

METALS / WET CHEMISTRY

	Recovery	RPD
Blank Spike	75-125	
Blank Spike Duplicate	75-125	<20%
Matrix Spike	75-125	
Matrix Spike Duplicate	75-125	<20%

	Recovery	RPD
Replicate		<20%
Check Standard	90-110	



INTERNATIONAL
TECHNOLOGY
CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

F204-259

Reference Document No. 371975
Page 1 of 1

Project Name/No. 1 USACE/305788
Sample Team Members 2 Dolly Li
Profit Center No. 3 3811
Project Manager Chick Magilson
Purchase Order No. 6
Required Report Date 11 3-week TAT

Samples Shipment Date 7 4/28/92
Lab Destination 8 Edison - IT Lab
Lab Contact 9 Ralph Kosci
Project Contact/Phone 12 Dolly 548-8777
Carrier/Waybill No. 13

Bill to: 5 P.O. BOX 5902
IT Corp - RA
Edison, NJ 08818
Report to: 10 Dolly Li
IT - Edison

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
131705	soil from wastepile	4/28/92	glass jar	1602	none		Good Rf.	

Special Instructions: 23 Hold for analysis

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐ Verbal by 2 weeks

QC Level: 27
I ☒ II ☐ III ☐ Project Specific (specify):

1. Relinquished by 28 Dolly Li
(Signature/Affiliation)

Date: 4/28/92
Time: 11:50 am

1. Received by 28
(Signature/Affiliation)

Date: 4-28-92
Time: 11:50

2. Relinquished by
(Signature/Affiliation)

Date:
Time:

2. Received by
(Signature/Affiliation)

Date:
Time:

3. Relinquished by
(Signature/Affiliation)

Date:
Time:

3. Received by
(Signature/Affiliation)

Date:
Time:

Comments: 29

lot # 10739



May 22, 1992

Mr. Chuck Magilson
IT Corporation
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792

Subject: Submission of UXO Removal After-Action Report For UXO Remediation
Support Services at the Former Raritan Arsenal, Edison, New Jersey;
Subcontract No. CRS91-0001, Order for Services No. 0001, 0002, 0003, 0006

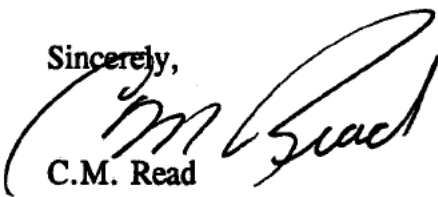
Dear Mr. Magilson:

Enclosed is the Final UXO Removal After-Action Report pertaining to UXO Remediation Support Services at the Former Raritan Arsenal, Edison New Jersey. EOD Technology, Inc. provided UXO Removal Services at Area 16, Building 118 and Areas 1, 4, 17 and 10 at the Former Raritan Arsenal, Edison, New Jersey.

If there are any questions regarding this report, please contact me at your earliest convenience. Unless otherwise notified within ten days, we will consider the report to be accepted.

It has been our pleasure to work with you and other personnel of IT Corporation on this contract, and we look forward to an opportunity to work with you again in the near future. I wish to thank you and your staff for the cooperation and support receive during the performance of this contract.

Sincerely,


C.M. Read
Project Manager

**UXO REMEDIATION SUPPORT SERVICES
FORMER RARITAN ARSENAL
EDISON, NEW JERSEY**

UXO REMOVAL AFTER - ACTION REPORT

SUBCONTRACT NO. CRS91-0001

ON

CONTRACT NO. DACA87-91-D-0009

ORDER FOR SERVICES NO. 0001, 0002, 0003, 0006

SUBMITTED TO:

IT Corporation

Monroeville, Pennsylvania

SUBMITTED BY:

EOD Technology, Inc.

Oak Ridge, Tennessee

May 20, 1992

"The view, opinions, and/or findings contained in the report are those of the author(s) and should not be constructed as an official Department of the Army position, policy, or decision, unless so designated by other documentation."

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✓ Included with IT Corporation
 Final to the USAF. Other daily information
 on file in IT's ggc. office

1.0 INTRODUCTION

EOD Technology, Inc. (EODT) of Oak Ridge, Tennessee was awarded a subcontract by IT Corporation (IT) to perform UXO/OEW Removal Activities at the Former Raritan Arsenal (FRA), Edison, NJ on 8 February 1991. The FRA site is approximately 3200 acres, and was used extensively for US Army operations from 1917 to 1963. The site is located in Middlesex County, New Jersey within Edison and Woodbridge Townships. It is situated on the banks of the Raritan River, approximately 20 miles southwest of lower Manhattan. The site is bordered on the north and northwest by Woodbridge Avenue and to the southwest by Millville Road and the ILR Landfill.

The topography of the site is generally flat. Elevations vary from mean sea level near the Raritan River to approximately 100 feet above mean sea level at the northwest boundary of Woodbridge Ave. Within the last 25 years, the northern half of the FRA has been developed. The southern half of the site is primarily brackish marshland with limited development. Other major areas of development include the EPA Facility, Middlesex County College and Thomas Edison County Park on the western part of the site.

During the period of 1917 - 1963, the U.S. Army performed a myriad of activities including storage and decommissioning of ordnance, arms, machinery and various other military hardware. During this period, some waste materials, including ordnance and components were reportedly buried on site. In addition, some explosive materials were routinely destroyed by surface or pit burning. Occasional accidental explosions in magazine buildings and outdoor storage areas reportedly scattered explosive materials over large areas. During a 1963 cleanup operation conducted by Letterkinney Army Depot, seventeen areas were designated as potentially contaminated. Four facilities now occupy the major portion of the former Raritan Arsenal. They are the Middlesex County College, Middlesex County's Edison Park, US Environmental Protection Agency offices and Raritan Center (Summit Associates and Federal Business Centers). Fourteen of the seventeen sites designated as potentially contaminated are currently owned by Raritan Center.

EODT was initially requested to provide UXO removal support in five areas (Areas 16, 4, 3, 2, 1) of the Arsenal. In May of 1991, Areas 6, 7, 8, 9, 10, 17 and Building 118 of the Arsenal, plus the Spoil Area of Middlesex County Utilities Authority property, were added to the list. Additionally, EODT was tasked to provide an on site disposal operation in June 1991.

EODT personnel arrived on site to commence UXO removal activities on May 7, 1991. Mr. C.M. Read was assigned as EOD Project Manager. Four UXO Specialists rounded out the crew. By July, the field crew had grown to one Senior UXO Supervisor and fourteen UXO Supervisors. Due to funding restrictions, the work force was reduced by three in January 1992. A further reduction in March cut the removal team to four. Final demobilization of all EODT site personnel took place on May 15, 1992.

1.1 General Information

Prior to commencement of activities, an overview of the work plan and an in-depth safety brief was presented to all site personnel in accordance with established EODT procedures.

Daily safety briefs were presented prior to the start of each work day. A weekly safety class was conducted on the first day of each week. This class covered topics from the Site Safety, Health and Emergency Response Plan (SHERP) and other applicable subjects, such as safe work practices, treatment for heat/cold injuries, etc. A re-cap of the days activities was conducted at the close of each day.

The primary instrument used for all UXO sweeps was the Schonstedt Heli-flux magnetometer. Quality Control checks were performed periodically by the EODT Site QA Specialist, EODT Corporate QA/QC Manager and the U.S. Army Corps of Engineers (USACE).

1.2 Right-of-Entry Permits

The Raritan Arsenal was closed in 1963 and all property has since been transferred to other government agencies and commercial interests. Right-of-entry permits to access work sites was coordinated by IT Corporation via the U.S. Army Corp of Engineers. Work on specific areas

commenced as the Right-of-Entry Permits were obtained.

1.3 Key Personnel Contacts

The following personnel were contacted and meetings were arranged as necessary. Various key personnel were involved in one area or another throughout this project. A complete list is provided in Attachment (4).

- U.S. Army Corps of Engineers, Huntsville
LTC B. Peterman - Contracting Officer (205) 955-5632
- U.S. Army Corps of Engineers, NY District (Raritan)
MAJ Ben Bauman - Contracting Officer Representative (908) 603-9517
- U.S. Army Corps of Engineers, Huntsville
Mike Carillo - Project Manager (205) 955-1512
- International Technology Inc. (Edison, NJ)
Lapyan Chan, Ph.D., Project Manager (908) 225-2000
- International Technology, Inc. (Monroeville, PA)
C.W. Magilson, Project Manager (908) 588-8775
- EOD Technology, Inc. (Oak Ridge, TN)
Mark Read, Project Manager (615-483-0007)

1.4 News Media Opportunity

Numerous media and press conferences were held during the course of this project. These events were coordinated by the USACE (New York District). EODT participation was always preplanned and clearly defined. News articles are provided in Attachment (1).

2.0 OPERATIONS

UXO/OEW Removal Actions occurred within five (5) areas of the FRA. In conjunction with these actions, an on site disposal operation was also initiated in June 1991 by EODT. Operations conducted at each individual work site are discussed individually in the following subparagraphs.

2.1 Area 16, Building # 643

Building # 643 (Magazine S-643) is located on Magazine Lane 16. The road leading to the site is an old railroad bed covered with fill dirt. Generally, the area is considered to be a tidal basin, in that the water level changed with the tide of the Raritan River. The only semi-dry areas are those adjacent to the actual magazine sites, which have been built up and used as "turn around" areas for ammunition transport vehicles.

This Magazine was destroyed by fire. Personnel involved in the fire fighting and subsequent activities reported numerous pieces of ordnance (37mm APHE) in the general area. The Army Explosive Ordnance Disposal Team (54th Ord Det (EOD), Ft. Monmouth, NJ) responded, recovered and subsequently destroyed in excess of 1200 rounds.

EODT personnel arrived on site May 13, 1991 and efforts were initiated to prepare the site for remediation activities. Vegetation in the area was cut and removed to facilitate removal operations. The removal action commenced with the laying out of magnetometer sweep lanes. A large concrete slab, believed to be a former railroad loading dock, was a major concern. Subsequently, a track hammer was requested to break the slab up into sections small enough to move.

Due to the large number of rounds discovered on or close to the surface, and numerous subsurface anomalies detected with magnetometers, an additional 25' was cleared on the eastern side of the site. The area was divided into two sub-areas, using the concrete slab as a center point. Hand digging to a depth of 24" resulted in the recovery of 289 each 37mm APHE projectiles on the first day.

On May 14 the track hammer arrived and broke up the large concrete slab to manageable pieces. This allowed the site to be completely swept both visually and with a magnetometer. At this point, the basic plan of action was to:

1. Perform a visual surface survey.
2. Grid the area into sweep lanes and perform a subsurface magnetometer survey.
3. Flag all anomalies.
4. Investigate anomalies.
5. Sift the soil as required.
6. Backfill as necessary.
7. Stage all non-hazardous material.
8. Stage all UXO/OEW for disposal.

All UXO/OEW was placed in plastic containers. At the end of each day all UXO/OEW was inventoried and placed into triple locked non-sparking storage containers. These boxes were numbered and stored within a chain link fence enclosure (security area), which was also locked.

On May 15, a sift-all (mechanical sifter) was positioned and set up for operation. Utilizing a track hoe and back hoe, sifting operations commenced and continued throughout this task to remove and store all UXO items encountered.

On May 16, an Army EOD Team from Fort Monmouth arrived to perform disposal operations. The disposal area used was in poor condition and required extensive backfill to build up the area. As disposal operations continued, additional fill was required.

In accordance with the Work Plan, EODT recovered UXO to a depth of the water table. However, it soon became obvious that there were large numbers of UXO below the water table which required removal. This was brought to the attention of USACE, Huntsville and we were instructed to excavate as deep as necessary to recover the rounds. In some areas we found UXO

as deep as 15 feet below the surface. The tide tables played a key role in deciding on what particular areas could be worked. In some locations, portable pumps were utilized to control the water level.

Early in the operation it became obvious that UXO was either buried or dumped in mass. On occasion, hundreds of UXO was excavated and sifted at a time. There was always a risk of missing some UXO and allowing it to fall into the clean soil being used for backfill. To eliminate this problem we commenced double sifting. The soil that went through the sifter would be re-sifted before being used as fill.

In early June, the security storage area was enlarged to accommodate the large number of UXO being recovered. By June 11, EODT had recovered over 20,000 rounds, most of which were in the secured staging area. Due to other military commitments, Army EOD could not keep up with the disposal requirements. It became apparent that disposal operations required full time attention. Subsequently, EODT was tasked to perform a full time disposal operation on or about July 10, 1991. Work continued on this site through July 18, 1991. A total of 29,234 UXO items were recovered from this site. This site activity and UXO logbooks are provided in Attachment (22).

The disposal operation had become highly visible, and numerous individuals representing various organizations were interested in the operation. As a result, representatives of these organizations were provided a tour of the site. Tours were always planned ahead of time and scheduled during break periods. No individuals were ever allowed on site during removal/disposal operations, except the USACE Safety Representative, the Site Engineer and EODT personnel.

2.2 Area 16, Building # 644

This site is adjacent to Building # 643. EODT commenced work on July 19, 1991. Removal operations in this area were performed in the same matter as Building # 643. However, due to lessons learned on the previous site, this area proceeded at a much faster pace. The

concentration of ordnance in this area was much less than at Building # 643. By August 2 we recovered 598 each 37MM APHE rounds.

On September 25, 1991 site work was completed. A total of 955 UXO items were recovered. This site activity and UXO logbooks are provided in Attachment (23).

2.3 Area 16, Building Sites # 645, # 646

A visual and magnetometer surface/subsurface survey was conducted at selected areas at Building # 645 and Building # 646 on August 8 and August 15, 1991 respectively. No UXO/OEW was discovered. Refer to Attachment (5).

2.4 Building # 118

Building 118 is currently utilized as an Administrative Building housing the staff and faculty of Middlesex County College, Division of Business Technologies. This building is commonly referred to as "NORTH HALL". The Dean of Business and Industry, Dr. Fishco, was provided with frequent briefings to inform him of any changes in our operations and to maintain his confidence. EODT maintained an excellent relationship with the faculty staff and they were content with the services being provided by EODT. This office performed business as usual during the entire remediation project. The site boundaries, underground utilities, and operational phases (work sectors) are identified on maps found in Attachment (7).

Specific safety procedures were formulated and utilized for the following unique circumstances encountered:

- Boosters within root system of live trees: Trees were cut approximately 3 ft. above ground. Major roots were cleared by hand and cut 360 degrees around remaining stump. Stump was removed by utilizing chain and backhoe. Soil removed from stump and entire root system was scanned with magnetometer.

- Unmarked utilities encountered: Excavation was stopped and college maintenance personnel were called to identify status of object (active/inactive) encountered and direction of burial. Unmarked utilities encountered included water lines, electrical cables, telephone cables and fuel storage tanks.

Major Activities Performed by Other Organizations:

- Ground penetrating radar and IRR survey of site conducted by a US Army Laboratory on August 21-22, 1991.
- Buried 155 gal. gasoline storage tank was removed by IT on August 27, 1991.
- Buried 1500 gal. Heating fuel tank was removed by IT Corporation on October 2, 1991.
- Concrete drive behind Building #118 was broken-up and removed by IT on December 16-18, 1991.

The initial subsurface UXO survey was conducted on June 20, 1991. The area was measured and marked off in 5 foot magnetometer sweep lanes. Each lane was surveyed utilizing a hand held magnetometer. All anomalies were flagged and plotted on site map. Due to the location and inhabitants of Building #118, several safety and operational factors were considered before commencement of excavation in this area. The entire work area around the site was fenced because of heavy pedestrian traffic. Traffic requirements made it necessary to fence in half of the area at a time, which facilitated entry/exit to Building #118 while maintaining restricted access to the excavation area. (i.e., rear entry to the building during Phase I and the front entry during Phase II).

The fence was constructed and EODT commenced operations on June 19, 1991. Ten ordnance related items were recovered at the northeast corner of the blacktop around Building # 118. Items recovered were non-explosive adaptors for artillery projectiles; the area was cleared to a depth of 6 ft., and UXO items were recovered at a depth of 3 to 5 ft. All other items recovered were a variety of metallic construction debris. All excavations were backfilled and

all operations ceased until placement of fence around Phase II area.

Construction of the fence in the next half of the area was completed and, on June 27, 1991, EODT commenced operations at the northwest edge of Building # 118. This area was previously identified as a hot area during the initial survey. Mk-IIA booster adaptors were found in this area. The operational plan was to expand excavation in all directions until no further boosters found. This plan was modified due to the large size and irregular shape of excavation. Attachment (7) shows the detailed area of major excavation. The density of boosters recovered, direction of burial and magnetometer readings indicated that excavation Area #1 (refer to Attachment (7), Map 4) was located on the edge of what proved to be a major trench burial site. Safety and operational factors called for a decision to limit further excavations to a 15 x 15 ft. grid. All further excavations were numbered, cleared and backfilled before starting on the next area. This system was utilized until encountering booster contaminated utility lines in Area # 7A.

All recovered explosive filled ordnance was transported daily (police escort) to the security staging area in Area 16 and locked in boxes. The initial requirement was to transport items in a woodlined steel box. This requirement limited the amount of boosters transported to a maximum of 900 per delivery, due to box capacity. Additionally, the loading and unloading of the box was very time consuming. Approval to transport items in sandbagged and wood lined truck bed was given by Mr. Wayne Galloway, USACE Safety Office, on June 16, 1991. This increased the number of boosters that could be transported by 50%.

Refer to Attachment (7), Map 4 regarding following discussions concerning Areas 1-17.

Area #1 boundaries were determined and the area was cleared and backfilled on July 9, 1991.

Area #2 excavation was started on July 10, 1991. This area contained a 30 ft. maple tree with a large number of boosters lodged within the root system. Another maple tree of approximately same size was located 15 to 20 ft. from this tree (Area #6). A hand dig was performed around

both trees to determine the degree of booster contamination. Exploration results lead to the decision to remove the trees for safety purposes. On July 11, excavations were backfilled to cover exposed boosters for safety purposes. Work in Area #2 and #6 was stopped until these trees were removed. Operations recommenced at Area #2 on August 5, 1991, when both stumps were removed and cleared of UXO. Area #2 was completed, cleared and backfilled on August 8, 1991.

Area #3 was started on July 11, 1991. Boosters in this area were glued together in a tar-like substance and had to be individually pried apart before removal. This area was cleared and backfilled on July 24, 1991.

Area #4 was started on July 24, 1991. Boosters found in this area were also glued together in same substance as found in Area #3. Several boosters in "Pristine" condition were found in this area with the stamped marking "Adaptor Mark II". This information was passed to the USACE. This area was cleared and backfilled on July 31, 1991.

Area #5 was started on July 31, 1991. Boosters found in this area were glued together in same manner as described in Area #3 and Area #4. This area was cleared and backfilled on August 5, 1991.

Area #6 was started on August 3, 1991. This area contains a large quantity of magnetic (ferrous oxide bearing) rock as fill material. Additionally, the root system of the tree which had been removed pushed boosters into a clay subsurface that had been clear in all previous excavations. This area was cleared and backfilled on Aug 15, 1991.

Area #7 was started on August 15, 1991. This area contained an old stump with booster contamination within the root system. Removal of this stump revealed boosters running beneath the asphalt apron of the drive area adjacent to Building #118. The filler tube of what proved to be a 115 gallon gasoline storage tank was also uncovered. The fuel tank was removed on August 27, 1991 by IT personnel. Boosters were then recovered beneath the tank area. A large

amount of magnetic rock and construction debris was found in this area. On August 29, 1991 concrete encased electrical and telephone cables were uncovered. These utilities were not on drawings provided to EODT. Boosters were found encased in the concrete with these cables. Area #7 was terminated at this point (September 6, 1991). The area was backfilled, while leaving the utilities uncovered.

An exploratory dig around North "I" building was started on September 6, 1991, per the request of Mr. Bob Nore, USACE Project Manager. The purpose was to ascertain if this building area required removal actions due to booster contamination. Four boosters were found along the front side of the building. This area was cleared and backfilled on September 11, 1991.

Area #8 was started on September 11, 1991. This area contained a buried 1500 gallon heating fuel tank, fuel contaminated soil and boosters (which were discovered under this tank on September 17, 1991). A large quantity of boosters was found within the root system of a large tree located adjacent to this area (Area #12). This area was backfilled on September 20, 1991 until a decision could be made by IT and the USACE regarding problems associated with the fuel tank and tree. Operations recommenced at Area #8 on October 9, 1991. The fuel contaminated soil was screened to a depth of nine feet and all located boosters were removed. Due to the depth of excavation, personnel were not allowed to enter the hole. Fuel contaminated soil was replaced, covered with polysheet and backfilled to a depth of 4 ft. on September 24, 1991. Due to depth of boosters in this area, a decision was made to leave all excavations open on the north side of the concrete encased utility lines. Excavations were limited to a depth of 4 ft., designated "LEVEL 1" of the numbered area. ("Note" Due to boosters being located at depths greater than 5 feet, these areas were separated into 2 levels. Zero to four feet depth is considered "Level 1" and beyond a depth of four feet is considered "Level 2". Once "Level 1" was cleared, the required sloping of the work areas was accomplished and then "Level 2" was cleared.) This procedure allowed for proper sloping of the excavation and provided future access to utilities. Additionally, proper sloping of Area #7A required removal of the concrete drive.

Excavation to expose the remainder of the utility lines between Building # 118 and North I Building began on September 20, 1991, at the request of LTC Poirrier, USACE. This portion of the utility lines proved to be clear of booster contamination and was backfilled on October 1, 1991.

Area #9 was started on October 1, 1991 and completed on October 2, 1991. This area contained a large quantity of magnetic rock.

Area #10 was started, cleared and backfilled on October 3, 1991. This area contains a large quantity of magnetic rock.

Area #11 was started on October 3, 1991, cleared and backfilled on October 7, 1991.

Excavation started on the area designated "street light cable" on October 7, 1991. Boosters were found along the cable to a distance of 50 ft. from the trench area. This area was cleared for a distance of 60 ft. from the trench and backfilled on October 9, 1991.

Area #12 started on October 10, 1991. The tree in this area was cut down on October 21, 1991, and the stump was removed on October 30, 1991. "Level 1" operations were completed on November 22, 1991. "Level 2" operations started on November 22, 1991 and were completed on November 27, 1991.

Area #13 started on October 15, 1991. An electrical cable for street lights running between Areas #12 and #13 was found to contain boosters within its concrete encasement. The electrical line and concrete were removed and transported to the demo range with the stump from Area #12. "Level 1" operations were completed on November 20, 1991. "Level 2" operations commenced November 20, 1991 and were completed on December 9, 1991.

Area #14 was started on November 13, 1991. "LEVEL 1" operations were completed on November 15, 1991. "LEVEL 2" operations were started and completed on December 10, 1991.

Area #15 "Level 1" operations were started and completed on November 13, 1991. "Level 2" operations were started on November 22, 1991 and completed on December 11, 1991. The boosters found in Areas #13, #14 and #15 were glued together in the same tar-like substance as previously discussed.

Area #16 "Level 1" operations were started and completed on November 19, 1991. "Level 2" operations started on December 10, 1991 and were completed on December 11, 1991.

Area #17 started on November 20, 1991 and was completed on February 18, 1992.

The "Drive Area" was started on December 16, 1991 with the breaking up and removal of the asphalt and concrete layers. These layers were removed on December 18, 1991. Excavation activities commenced on December 19, 1991, and boosters were located within the excavation.

The entire site was shut down from December 20, 1991 through January 6, 1992. Excavation resumed on January 7, 1992. The drive was excavated the entire length of the area. Shoring was placed along electrical line to prevent washout and possible collapse. The fill in this area contains high magnetic content. All areas of drive were cleared to a minimum of depth of 4 feet. This area was checked by Mr. Wayne Shaw (USACE Safety Office) and considered clear on March 3, 1992. The concrete encased utilities (Area 7A) running through this area were still contaminated with boosters.

Sector #1 (Attachment 7, map #5) was surveyed, marked and plotted beginning on December 3, 1991. All "Hot Spots" were exposed and left open for QA inspection by the USACE on December 6, 1991. No UXO/OEW items were found in this area. All items recovered were magnetic materials and construction debris.

Sector #2 (Attachment #7, map #5) was surveyed, marked and plotted beginning on December 12, 1991. Excavation on "Hot Spots" began on February 18, 1992. This area contained debris from old nurses quarters that had been torn down. Three boosters were found scattered in this

area. All "Hot Spots" were exposed and a QA check performed by Mr. Wayne Shaw on February 19, 1992, and then backfilled.

Sector #3 (Attachment #7, map #5) was surveyed, marked and plotted on February 25, 1992. All "Hot Spots" were exposed and inspected by Mr. Wayne Shaw on March 3, 1992. No ordnance items were found in this area. The area was backfilled on March 4, 1992.

Sector #4 (Attachment #7, map #5) survey, marking and plotting operations began on March 17, 1992. One empty MKII Hand Grenade, unfuzed, was discovered on March 18, 1992. An isolated pocket of boosters (167 each) was discovered on March 19, 1992.

Area #7A (Attachment #7, map #5). EODT placed additional bracing in the excavation to compensate for the removal of concrete from electrical cable. Concrete removal began on March 24, 1992. An electric jack hammer was originally used, however an air hammer was eventually needed due to the hardness and thickness of the concrete. Concrete was cut into four portable pieces. Two of these pieces contained boosters and were transported to the demolition range, where the encased boosters were detonated. This area was completed on April 8, 1992.

Drive Area (Attachment #7, map #5). Work was resumed in this area on March 30, 1992. The accumulated water in the excavation was pumped out and the area was sloped in order to gain safe access to the concrete encased utility lines. This area was completed on April 9, 1992.

New Electrical Cable (Attachment #7, map #5). Trenching for the new electrical cable began on March 5, 1992. An unprotected and unrecorded electrical line was hit. Trenching was completed on March 12, 1992 and backfilled on March 17, 1992.

The USACE QA Inspection was started on April 17, 1992 by Wayne Shaw. The stockpiled soil from numerous areas was checked. EODT had been directed not to back fill and this prevented area/soil re-inspection. When this fill was removed, a concrete walkway was uncovered. This walkway was then removed and several boosters were discovered. A total of 487 boosters were

recovered from this area. The QA Inspection resumed on April 27, 1992. No additional ordnance was located.

2.5 Area # 4

Area # 4 is a 2 acre section (see Attachment #11) completely fenced in by a six foot high chain link fence which was constructed by the USEPA. The entire area was deemed to be the Exclusion Zone for this project. This site was used as a high explosive salvage and melt-out area for demilitarization of various ordnance items. All personnel who worked in the Exclusion Zone were required to take a full physical prior to any soil excavation operations being conducted and an exit physical was required upon their departure.

Basic site preparation began on September 24, 1991 with the arrival of a five (5) man work crew, miscellaneous equipment and work trailer. The crew conducted a surface search for ordnance and found a 75mm projectile which contained some explosive residue. Also, at this time we marked all known explosive contaminated areas with stakes and day-glo tape to insure the areas were conspicuously marked and identified. The next phase included removal of all vegetation and trees 3 inches or less in diameter, all railroad ties, trash and debris which littered the entire work site, which was collected and placed in one area. This clean-up phase took two weeks to complete and was conducted concurrently with other tasks. Everything that was removed from the main area was stored along the east side of the site as a temporary measure. A 10' wide area along the western edge of the site was cleared of UXO/OEW and the debris was placed there, with the exception of the trees and large shrubs which were run through a chipper and spread out in designated areas.

On October 1, 1991, IT provided a Health and Safety class on Site # 4. Also, we were issued full-face masks and were fit tested. Tracy Estes presented the class for IT. On this date, we also installed the Geofabric material to the chain link fence for dust suppression.

On October 2, 1991, a magnetometer survey was conducted and all "hits" were cleared from the area that we used as the Contamination Reduction Zone (CRZ). The CRZ was located in the

Northeast corner of the site, which contained the double gates leading into the area. This 30' by 50' CRZ was completed in two days. The decontamination pad was built to accommodate a track-hoe excavator, which was the largest piece of equipment used in this area. The pad was dug out and sloped to one side in order to channel all water to a sump. Concurrently with this operation, we received a Front-End Loader (Model 916), Sifter-Shaker and one conveyor assembly. The Sifter was placed on the street as a temporary measure until we cleared and prepared the area to accept the equipment. The conveyor assembly was returned for modifications to reduce the speed of the conveyor belt and the 110VAC motor was replaced with a 220VAC motor. In addition, we received a track-hoe, a pressure washer and PPE from IT. A water source was connected on October 16, 1991.

On October 4, 1991, a magnetometer survey of the entire area commenced, with the exception of the known explosive steam out area (Pit 6) and the area adjacent and parallel to the east side fence line due to a known sewer line pipe three feet underground. Five foot wide sweep lanes were established using stakes and hemp in a systematic pattern. When subsurface anomalies were located, we used 12" high red flags to mark them.

On October 22, 1991, hand digging of the "hits" commenced in the area where the sifter would be placed. After clearing this area, the sifter was placed in position. Digging operations commenced with the track-hoe on November 1, 1991 in Pit #1. The wooden hopper system on the rear of the sifter did not work due to the damp soil sticking to the sides and clogging the hopper. This required one person to constantly push the soil down to keep the system in operation. The hopper assembly was removed and operations continued smoothly.

The first drums for hazardous waste (contaminated protective clothing) to be stored in were received. To date, waste had been placed in plastic bags and stored on site. A 5000 gallon trailer for liquid waste was placed on site and water that collected in the sump was pumped into the holding trailer.

EODT continued digging out the various pits known to contain explosives. While digging out Pit #4, we found the first piece of ordnance which was an intact WWI Aerial Bomb. We dug out all of the smaller pits that contained traces of high explosive and recovered approximately 10 pounds of TNT.

Excavation started in the Southwest corner of the site on November 12, 1991 and the entire corner of Site #4 was systematically excavated to a depth of six feet and cleared of all explosives and metal. The procedures were then modified with the agreement of the Corps of Engineers representative to excavate to a depth of three feet. If nothing was found, we would proceed down to natural soil and then mag the area. If the depth did not reach natural soil within six feet we would dig test holes to insure no residue was left under the natural soil. This procedure was used during the entire period that we excavated OEW from the major explosive laden pit.

Whenever pockets of explosives were located, all mechanical excavation would cease and removal by hand was initiated. This was the most time consuming part of the removal operation. At times it would require many days of hand excavation before we were able to return to digging with the track-hoe. At the end of February 1992, EODT had excavated over 10,000 lbs of bulk explosives (TNT) from Area # 4 and over 30 UXO items, which varied in size from 75mm adapter boosters to a 9.2 inch howitzer projectile.

The explosive removal operation at Area # 4 was completed on March 18, 1992. During the month of March we removed 2,629 pounds of HE residue and OEW. Explosive removal in Pit 6 (Brown Pit) was completed on March 11, 1992. All areas suspected of having explosives were excavated. While digging adjacent to the CRZ, we uncovered two steam pits and recovered 611 pounds of HE (TNT). The remaining area which had to be surveyed was finished and all "hits" were excavated. EODT recovered two 75mm HE projectiles (unfuzed) and two projectile adapter-boosters (loaded).

We experienced many different problems during our tenure in Area # 4. The weather provided some minor challenges however, it never caused us to cease operations. Although there was

only one major equipment failure, the problem always encountered was having to decontaminate the equipment to remove it from the area for repair work, which averaged out to 3 hours per occasion.

All heavy equipment was decontaminated and turned over to IT for removal and return to vendors. The trailers were emptied, cleaned and readied for return.

Exit physicals were accomplished on March 25, 1992 at Enviro-Care for Becker, Bucy, Die and Rodgers. We concluded all last minute details at Area # 4 and demobilized.

A Q/C Inspection of Area # 4 was performed by EODT on March 12, 1992, and no UXO/OEW was located. A subsequent QA check was performed by USACE personnel. Again, no UXO/OEW was located.

2.6 Area # 17

This area was used as a property disposal and salvage storage area. Presently, the area makes up part of the Middlesex County College campus. It is adjacent to a student center and is a hub of student activity.

On September 9, 1991 the crew arrived on site. Because of heavy pedestrian traffic and the general location, a decision was made to only locate and mark magnetometer "hits". No intrusive work would occur until decisions were made regarding the best way to proceed.

Sweep lanes were established and, as the survey began, it immediately became obvious we would have a tremendous amount of "hits". Initially, red flags were used to mark same. This was stopped due to the enormous number involved, and all barriers and signs had to be removed at the end of each work day. The decision was made to use nails with marking tape to designate "hits". This system worked very well. A total of 7,654 "hits" were recorded (see Attachment 6).

The determination was made that five exploratory digs would be made. The excavation would be 6' x 6' x 3' deep. On October 3, 1991 excavation began and continued until October 10, 1991. No UXO was discovered. One piece of OEW scrap (60MM mortar fins) was recovered.

During this operation, there was an additional tasking on September 17, 1991, when we returned from a four day break. During the break period, a hand grenade (empty) had been found on the Middlesex College campus in the general area of the tennis courts. The decision was made that the team from Area # 17 would surface sweep the area, check the area where the grenade was found and any other suspicious locations with a magnetometer. All "hits" would be recorded. (Attachment #7)

Operations began at 11 a.m. on September 17, 1991 and were completed at approximately 5:15 p.m. No UXO/OEW was located.

2.7 Area # 10

Area # 10 is located on what was the northeastern corner of the arsenal. This report covers only part 1 and 2, which are located in the south western corner of Area # 10. Original depot maps would show this area to have been in Magazine Rows E and F. This area is presently part of the Thomas A. Edison Park of Middlesex County. The terrain is generally flat with one portion being heavily vegetated, and the rest is grass and an asphalt parking lot. The parking lot has concrete curbs, access roads and a lighting system.

This area was known to have been in the "fan" of at least two magazine detonations. One of the magazines scattered several hundred thousand French Rifle Grenades throughout the area when it detonated. The other magazine contained MK II Grenades.

A three person crew started working at this area on October 1, 1991. The general plan was to:

1. Divide the designated area into manageable sub areas.
2. Lay out lanes for the magnetometer survey.
3. Mark all magnetometer "hits" and items found on a map.

4. Dig to 12" by hand.
5. Use back hoe to dig deeper "hits".

It became obvious we were going to encounter a tremendous amount of "hits", the majority being magnetic rocks. The decision was made by the USACE, Huntsville to only record ordnance discovered, thus saving time.

There was a desire to finish this area as soon as possible because this was a high visibility site. We took personnel from other sites, as they had down time, and put them to work in this area. This proved to be a worthwhile procedure.

On October 18, 1991 we located the first French Rifle Grenade in Area # 5. This had a dramatic impact on how we looked at this site. On October 21, 1991 the second grenade was discovered. This resulted in security being put on the site when the crew was not working.

The "hits" along the road (former Magazine Line F) were so heavy that a decision was made to remove eight to ten inches of the surface along the shoulder of the road with a bucket loader, inspect the removed soil for ordnance and mag the exposed surface. This system proved to be both efficient and effective. During this entire period, EODT constantly discovered parts and components of both types of grenades. By March 17, 1992, ^{thirteen} ~~fourteen~~ French Rifle Grenades had been discovered and the decision was made to fence in the area. On March 25, 1992 fence construction began.

Due to down sizing of project, removal action was curtailed on March 25, 1992. The remaining technicians were used to complete Building # 118 and fulfill all demolition requirements. On April 27, 1992, three (3) UXO Supervisors returned to the area and final demobilization occurred on May 15, 1992.

An additional short notice tasking in Area # 10 was given on August 21, 1991. This area is located in Edison Park on the boundary of Raritan Center. It is approximately 115' x 65' and

contained a fill pile 25' at the base and about 9' high. The area was required to be checked for and cleared of UXO/OEW.

The crew that was working at Area #16 was used on this task. Work commenced by laying sweep lanes and checking the entire area with a magnetometer. All "hits" were recorded and dug to a depth of 12" by hand. The deeper "hits" were excavated by use of a Case 580 Loader/Backhoe. Each bucket of excavated soil was examined for UXO/OEW. All excavated areas were backfilled.

Two pieces of OEW, (one 37MM shell casing, and one 40MM shell casing) were recovered and work was completed on August 28, 1992. (see Attachment 8).

2.8 Area 1

Area 1 is approximately 3 acres, with heavy vegetation throughout. On May 8, 1992 the field team started by marking off grids, and then laying out 5 foot wide sweep lanes. Numerous pieces of metallic debris (i.e. fence posts, railroad spikes, etc.) were excavated and staged in one area. There was no UXO/OEW located at this site and all operations were completed on May 9, 1992.

2.9 Disposal Operation

All UXO/OEW found was disposed of within the boundaries of the former arsenal at a designated disposal site. Initial disposal operations were performed by military EOD personnel (54th Ord Det (EOD), Ft. Monmouth, NJ). Due to a lack of personnel and other military commitments, they were unable to maintain the schedule required by the volume of ordnance being recovered. Additionally, the constraints involving noise, ground shock and fragmentation containment were proving to be exceedingly difficult to maintain. Subsequently, all disposal operations were turned over to EODT. The tremendous back log of UXO at this time was in excess of 25,000 items. Disposal operations continued throughout the project. The backlog of ordnance was destroyed. The ground shock, noise and fragmentation constraints were more than adequately addressed. There were virtually no complaints from local residents or

municipalities after the transition.

The demolition site was surface swept after each disposal shot. All scrap was placed in a locked container pending certification that it was explosive free and then transported to a designated DOD Property Disposal Facility.

2.10 Equipment Utilized by EODT

The following equipment was utilized by EODT during this project:

- 6 Schonstedt magnetometers
- 1 Schonstedt MAC 51B, Magnetic and Cable Locator
- 3 Rubber Tire Back Hoes
- 1 Excavator EL-240 (20 ton)
- 1 Articulating Bucket Loader
- 1 Case Uni-Loader (BOBCAT)
- 4 Trucks for equipment and personnel
- Common hand tools, shovels, rakes, etc.
- Marker flags and string/sisal for lane marking
- 1 Non-magnetic tool set
- 1 4KW Generator
- 2 2" Pumps
- 1 High Pressure Washer
- 2 110 Volt Sump Pumps
- 1 Dirt Sifter/Screen All
- 2 Conveyors - 20 feet long
- 1 Electric Jack Hammer
- 1 Compressor w/Air Driven Jack Hammer
- 1 Decibel Meter
- 1 Pow/Gal-27 Blasting Machine
- 3 Explosive Storage Magazines

- 4 Site Logistics Trailers
- 4 Portable Telephones
- 7 Motorola Radios MT-1000

2.11 On Site Training

2.11.1 Personnel Training

All personnel assigned to this project were trained on ordnance recognition, heavy equipment, site specific hazards, operations and safety precautions.

2.11.2 Daily Training

Prior to the start of each work day, a Tailgate Safety Brief was conducted. A minimum of the weather conditions, site conditions, UXO hazards, insects and other safety concerns from the previous day were covered. At the end of the work day, a debrief was conducted outlining problems encountered, suggestions, progress made and plans for the following day.

2.11.3 Visitor Training

All visitors were briefed on the specific operations, emergency evacuation route and procedures and specific hazards prior to being allowed into any work area.

2.11.4 End of Contract Debrief

During the demobilization phase, a final debrief was conducted covering lessons learned. Driver safety was stressed for the final trip home.

2.12 Daily Activities

See Attachment(s) 22 through 28.

2.13 Weather and Terrain

Daily work hours would vary depending on sunrise and sunset. Generally, the work week was 10 hour days from Monday through Thursday. The weather varied from high temperatures in the 90's to lows in the teens. We encountered a moderate amount of rain, sleet, and snow. The

terrain is generally flat, from just above sea level to approximately 100' above sea level. Much of the area is marsh and has heavy reed and grass growth.

Daily work hours from 0630 until 1700 were established for this project. This permitted the crew to be off-site prior to the late afternoon thunderstorms in the summer months, which could have created a loss of productive time due to safety concerns regarding electromagnetic hazards.

2.14 Daily Operations Brief

An operations briefing was conducted each day by the Senior UXO Supervisor prior to the start of work to coordinate site locations and tasks to be performed in each specific area. Problem areas were addressed at this time, and any suggestions to improve our plan of action were considered. All equipment in use was evaluated and any necessary changes were implemented.

2.15 Report of Findings

During this project 114,117 UXO items and 12,361 pounds of trinitrotoluene (TNT) were recovered, transported and disposed of on site without incident and within the requirements of the Disposal Plan and Range SOP.

See Attachment(s) 6, 8, 12, 13, 20.

3.0 QUALITY CONTROL

3.1 UXO/OEW

All UXO/OEW found was inspected by a qualified UXO Supervisor and confirmed as either inert or hazardous, and then appropriately dealt with in accordance with the Work Plan.

3.2 Surface Sites

Each surface site was checked visually for any UXO or OEW contamination. The area checked was approximately 5% of the areas that were remediated. All areas met or exceeded the on site EODT QC requirements. A corporate QC check was performed by the EODT Corporate QC Manager, and Q/A was performed by a U.S. Army Corp of Engineers representative.

3.3 Subsurface Sites

Each subsurface site was checked visually and with a magnetometer for any UXO or OEW contamination. The area checked was approximately 5% of the area remediated. All areas met or exceeded QC requirements after following the same procedures as stated in paragraph 3.2 above.

3.4 Equipment Calibration

The magnetometers were checked each morning and after every break against a known source. The batteries were changed as needed and the magnetometers were cleaned and serviced every Friday. Whenever they were exposed to rain, they were checked, cleaned and serviced at the end of that day.

4.0 SITE SAFETY

4.1 Safety Briefing (Tailgate)

A Tailgate Safety Brief was conducted each morning prior to any work being started. The safety topics varied but always included protective equipment and clothing, physical hazards, emergency procedures, emergency medical procedures and special equipment. These briefings are documented in the daily activity logs.

4.2 Safety Violations

None.

4.3 Safety Training

A weekly safety training class was conducted the first work day of each week prior to start of operations. This class covered topics in the SHERP, explosive ordnance, explosive and demolition procedures, and other applicable topics.

5.0 ORDNANCE ACCOUNTABILITY RECORD

5.1 Area # 16, Building Site # 643

A total of 29,234 each 37MM Armor Piercing, High Explosive Projectiles were recovered. Refer to Attachment (6).

5.2 Area # 16, Building Site # 644

A total of 955 each 37MM Armor Piercing, High Explosive Projectiles were recovered. Refer to Attachment (6).

5.3 Area # 4 (ATTACHMENT 13)

The below listed UXO items and explosives were recovered from this area. Refer to Attachment (13).

<u>NOMENCLATURE</u>	<u>QUANTITY</u>
Trinitrotoluene (TNT)	12,361 lbs.
75MM Projectile	21 each
155MM Projectile	1 each
9.2 Inch Projectile	1 each
Aerial Bomb, WWI	1 each
Fuze, Projectile, Point Detonating	2 each
Fuze, Projectile, Powder Train Time	1 each
Adaptor Booster, Projectile	10 each
Booster, 37MM Projectile	3 each

5.4 Building # 118

A total of 83,873 Projectile Adaptor Booster, MK II, Mod I and 1 each MKII Hand Grenade was recovered. Refer to Attachment (8).

5.5 AREA # 10

A total of 13 French Rifle Grenades (V.B. Rifle Grenade, Mark I) were recovered. In addition, 1 each 3 Pound U.S. Practice Bomb was recovered. Refer to Attachment (16).

5.6 Ordnance/Explosive Compilation

The following is a listing of total explosives and UXO items recovered during this project.

<u>NOMENCLATURE</u>	<u>QUANTITY</u>
Trinitrotoluene (TNT)	12,361 lbs.
Adapter Booster MK11 Mod 1	83,873
37MM Armor Piercing, High Explosive Projectiles (APHE)	30,189
75MM Projectiles (HE)	21
French Rifle Grenade (V.B. Rifle Grenade MK 1)	13
Adapter Booster Projectile	10
Booster, 37MM Projectile	3
Fuze Projectile, Point Detonating	2
Hand Grenade MK11	1
U.S. Practice Bomb 3 pound	1
155MM Projectile	1
9.2 inch Projectile	1
World War I Aerial Bomb British	1
37MM Cartridge Case	<u>1</u>
TOTAL UXO ITEMS	114,117

6.0 DEMOBILIZATION

6.1 Area # 16, Building # 643

Site demobilized 19 July 1991.

6.2 Area # 16, Building # 644

Site demobilized 25 September 1991.

6.3 Area # 17

Site demobilized 10 October 1991.

6.4 Area # 4

Site demobilized 25 March 1992.

6.5 Building # 118

Site demobilized 27 April 1992.

6.6 Area # 10

Site demobilized 14 May 1992.

6.7 Personnel

The following is a list of demobilization dates for EODT personnel assigned to the FRA project.

<u>Date Demobilized</u>	<u>No./Grade</u>	<u>No. of Personnel</u> <u>Remaining</u>
10 Jan 92	3 UXO Supervisors	12
26 Mar 92	8 UXO Supervisors	4
21 Apr 92	1 Site Supervisor	3
15 May 92	3 UXO Supervisors	0

6.8 Inventory

All equipment was collected, cleaned, and inventoried. This inventory was jointly verified by representatives from EODT, IT Corporation, and US Corps of Engineers (USACE).

7.0 AREAS OF CONCERN AND RECOMMENDATIONS

Many interested parties came by the working sites and this tended to disrupt operations. We recommend making up packages containing information stated below. These could then be given out to interested parties, as approved by the client.

1. An overview of the entire operation.
2. A specific overview of the individual site.
3. Names and phone numbers to call for more specific information.

8.0 MANHOURS AND MILEAGE

8.1 Manhours

A total of 21,564.5 manhours were utilized to support this contract. This included site visits, plans, field operations, Project Manager and Corporate QC Manager visits, and reports.

8.2 Mileage Data (Mob/Demob)

A total of 15,784 vehicle miles were accumulated to support the mobilization/demobilization of this project.

8.3 Mileage Data (Home Leave)

A total of 15,278 miles were accumulated to support personnel going on home leave.

8.4 Air Flights

A total of 74 round trip and 8 one way air fares were utilized in support of this project.

9.0 SUMMARY

IT Corporation received Delivery Orders 0001, 0002, 0003, and 0006 from the US Army Corps of Engineers (USACE), Huntsville, Alabama to perform UXO removal actions at the Former Raritan Arsenal (FRA) located in Middlesex County, New Jersey. IT subsequently selected EOD Technology, Inc. (EODT) as its unexploded ordnance (UXO) subcontractor. This project consisted of Areas 1, 2, 3, 4, 6, 7, 8, 9, 10, 17, Building 118, Buildings 643 and 644 of Area 16 and the Spoils Area. Areas 2, 3, 4, 6, 7, 8, 9, and Buildings 643 and 644 in Area 16 were located within the Raritan Center Industrial Park. Area 10 is located in the Middlesex County Park. The area designated #1 is on land occupied by the US Environmental Protection Agency (USEPA). Building 118 (North Hall) and Area 17 are both located on land owned by the Middlesex County College. The Spoils Area is located across the river from the Raritan Center Industrial Park on land owned by Middlesex County Utilities Authority. Although there were numerous areas designated by delivery order for UXO/OEW removal actions, time and funding only allowed us to complete Areas 1, 4, 17, Building 118, and Buildings 643 and 644.

The Scope of Work included vegetation removal, identification and removal of UXO/OEW, and recovery and turn in of inert ordnance and ordnance related scrap. All live UXO and bulk explosive was destroyed on site by detonation.

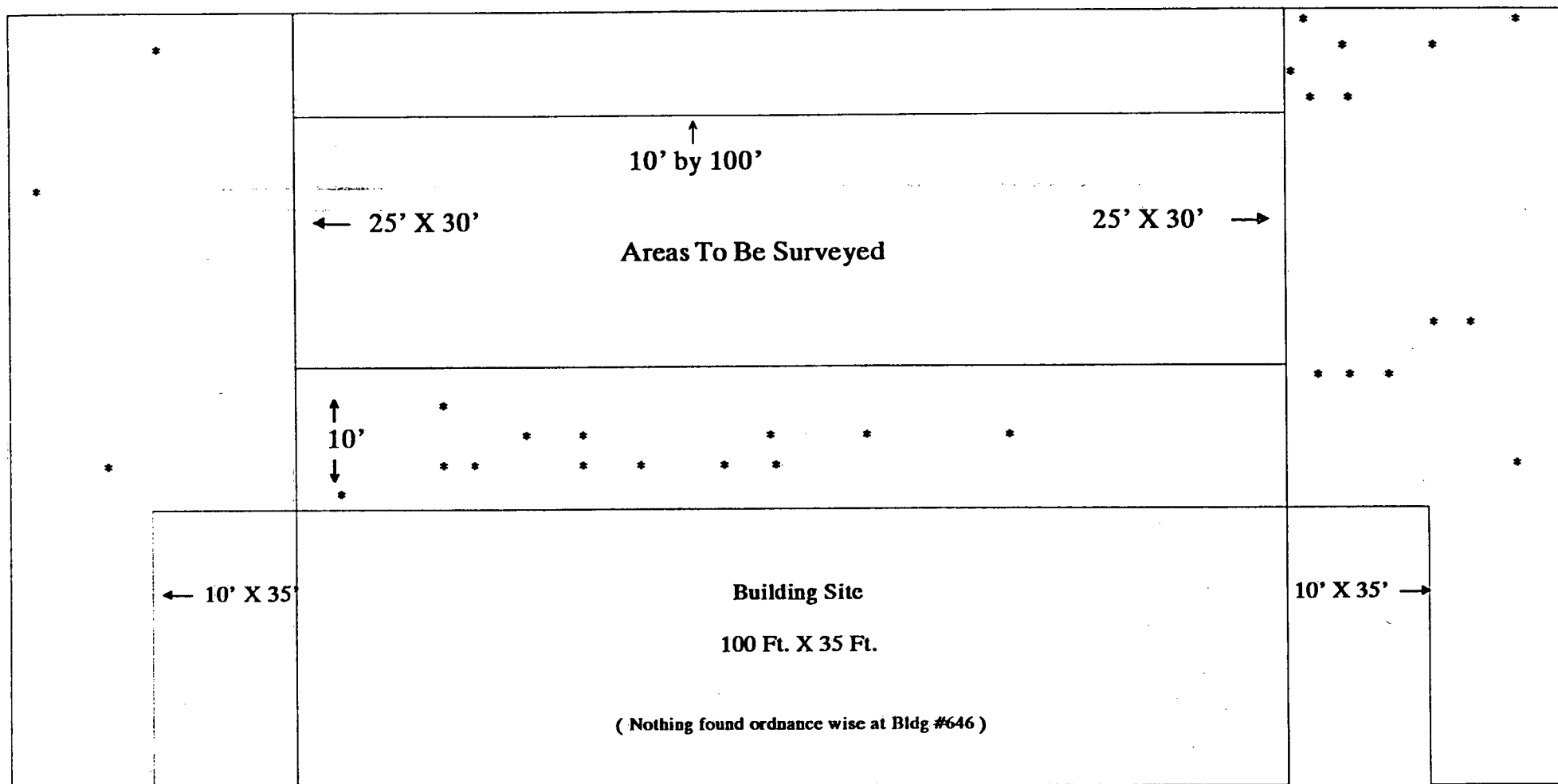
The EODT Field Team followed Standard Operating Procedures (SOP's) that were outlined in the approved Work Plans. During the field operations portion on this project, a total of 114,117 UXO items and 12,361 lbs. of TNT were disposed of by detonation.

The number of EODT personnel on site fluctuated from 3-15 over a period of 12 months. From mobilization through demobilization, no time was lost to accidents or weather. However, when one considers this work took place within one of the most heavily populated corridors in the nation, the true scope of this accomplishment becomes obvious.

ATTACHMENT 5

**SURVEY PLAN OF AREA 16 BUILDING SITES
FORMER RARITAN ARSENAL, EDISON, NEW JERSEY**

FIGURE 2



Buildibg # 646

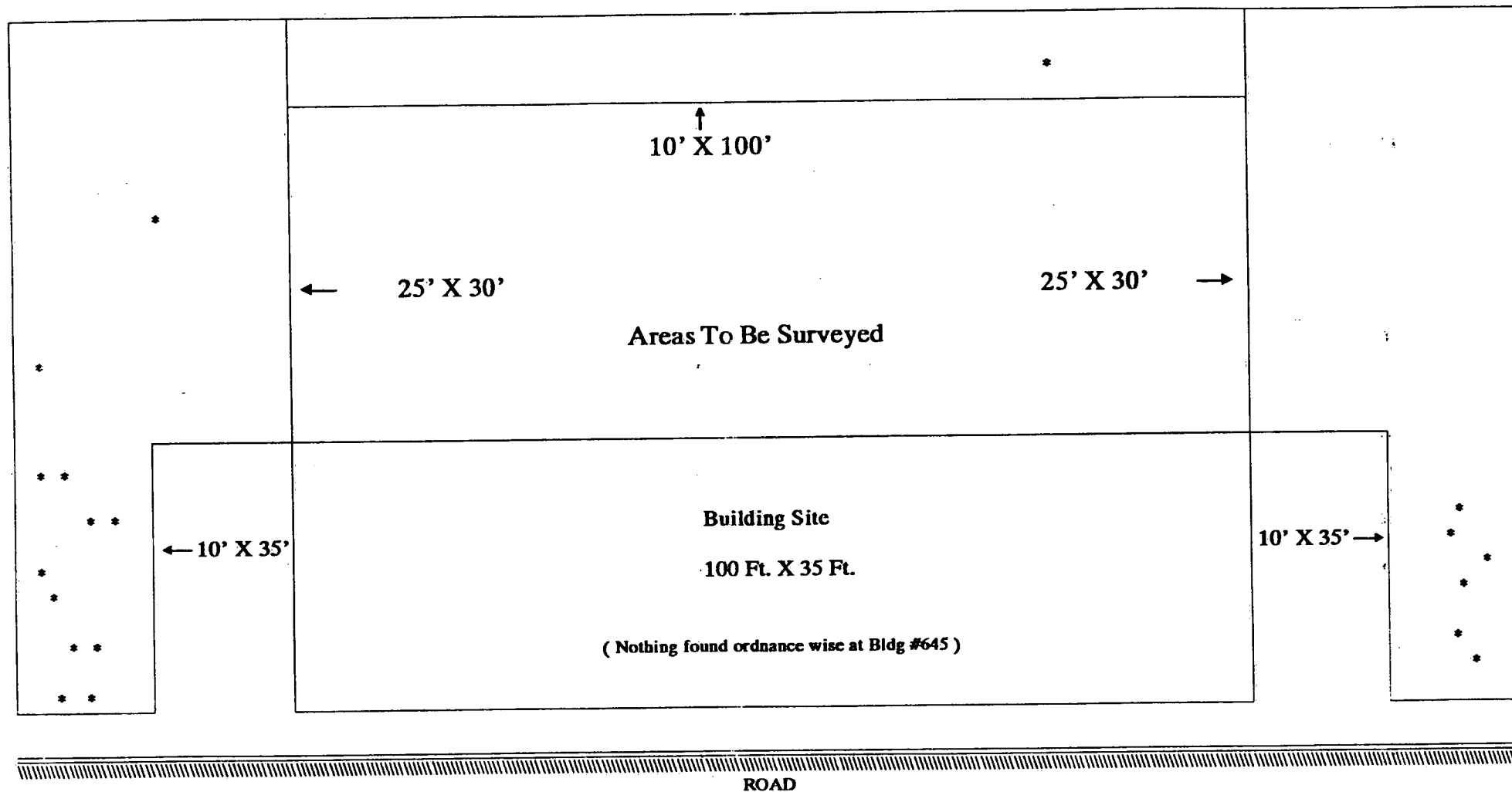
Date Completed 8 Aug 91

Results Neg. NO Explosive Ordnance

Note: * — Scrap metals/Wire/Ruber, etc.

SURVEY PLAN OF AREA 16 BUILDING SITES
FORMER RARITAN ARSENAL, EDISON, NEW JERSEY

FIGURE 1



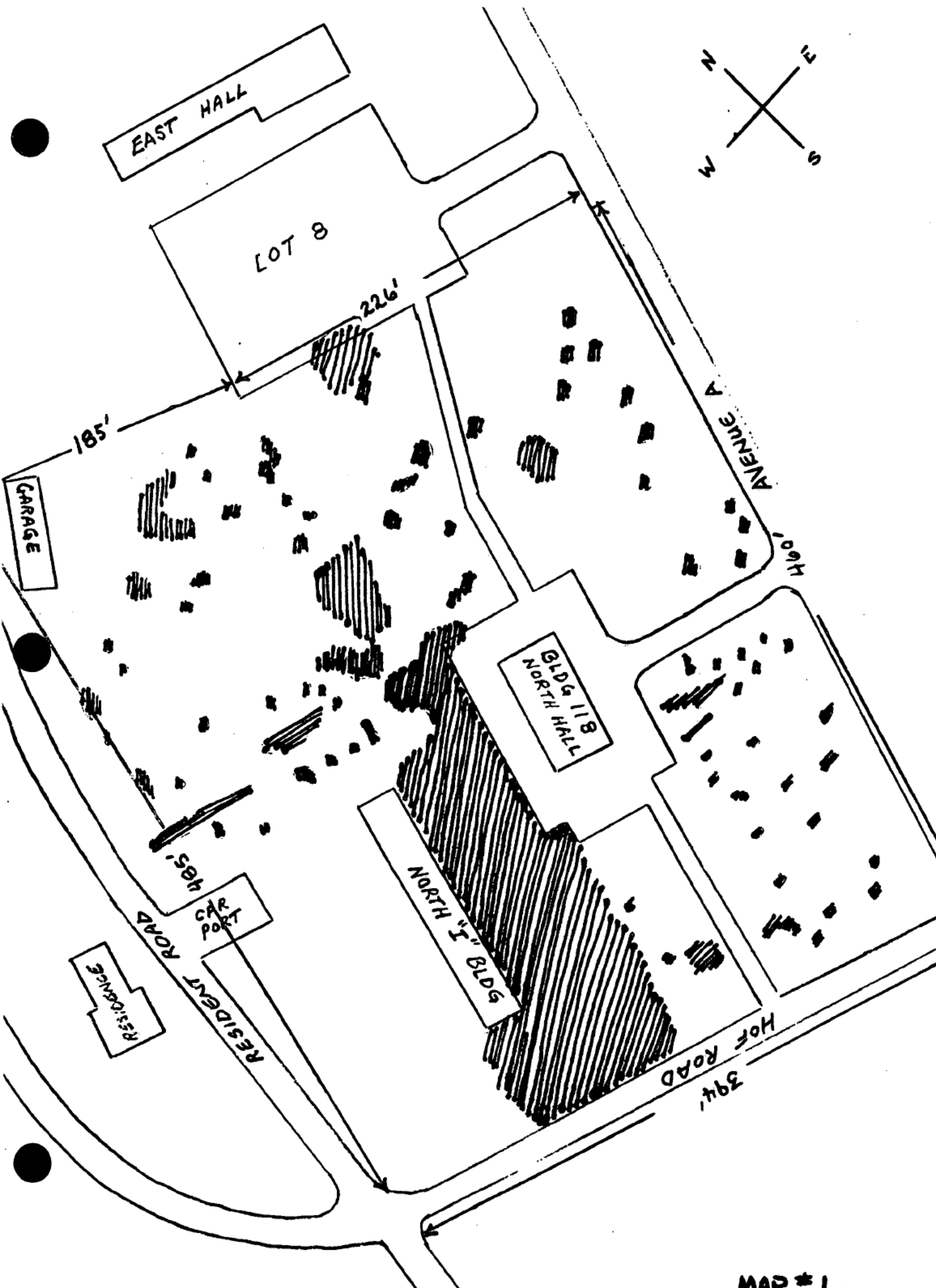
Building # 645

Date Completed 15 Aug '91

Results Neg. - No Explosive Ordnance

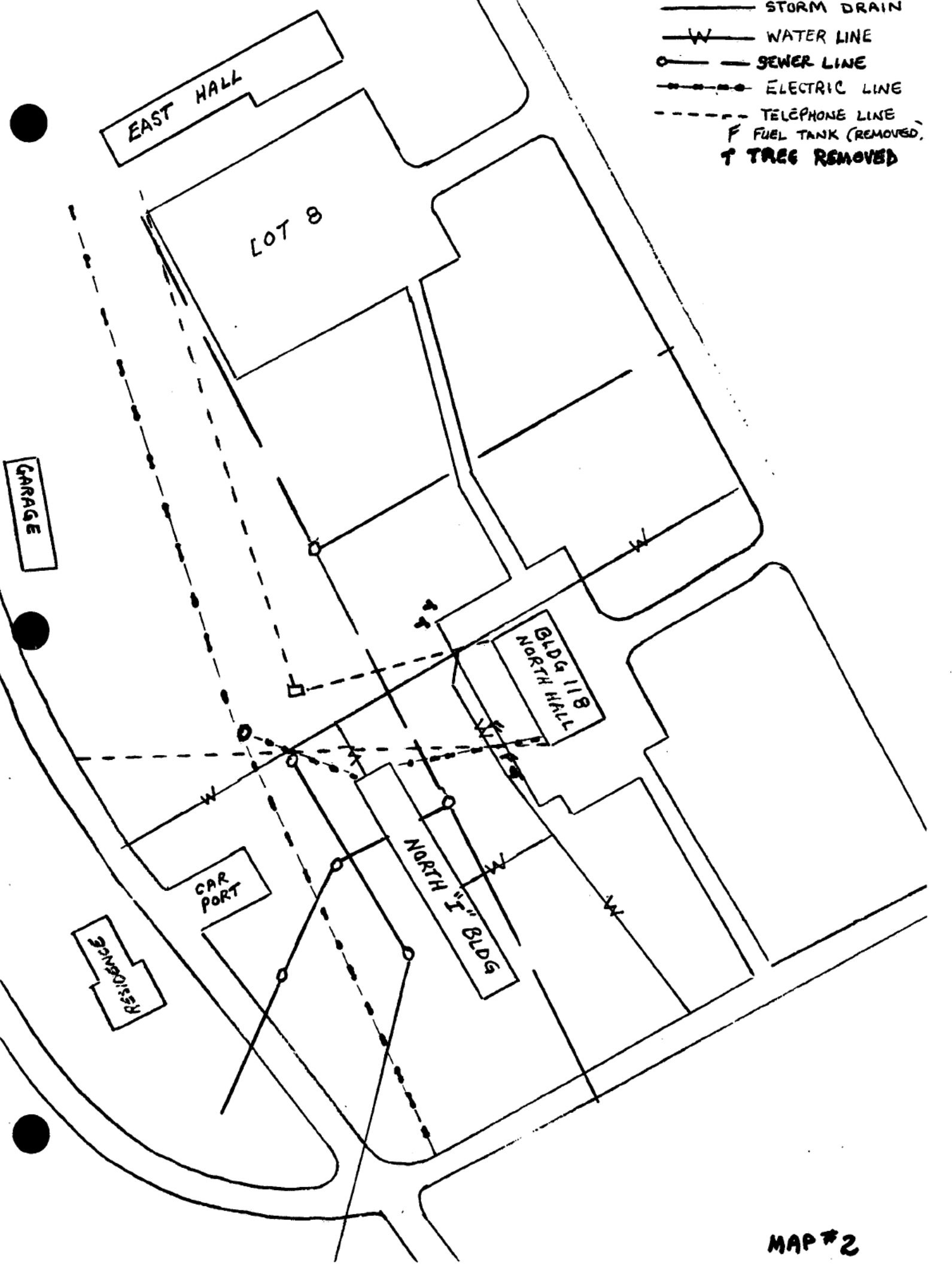
Note: * — Scrap metals/Wire/Ruber, etc.

ATTACHMENT 7

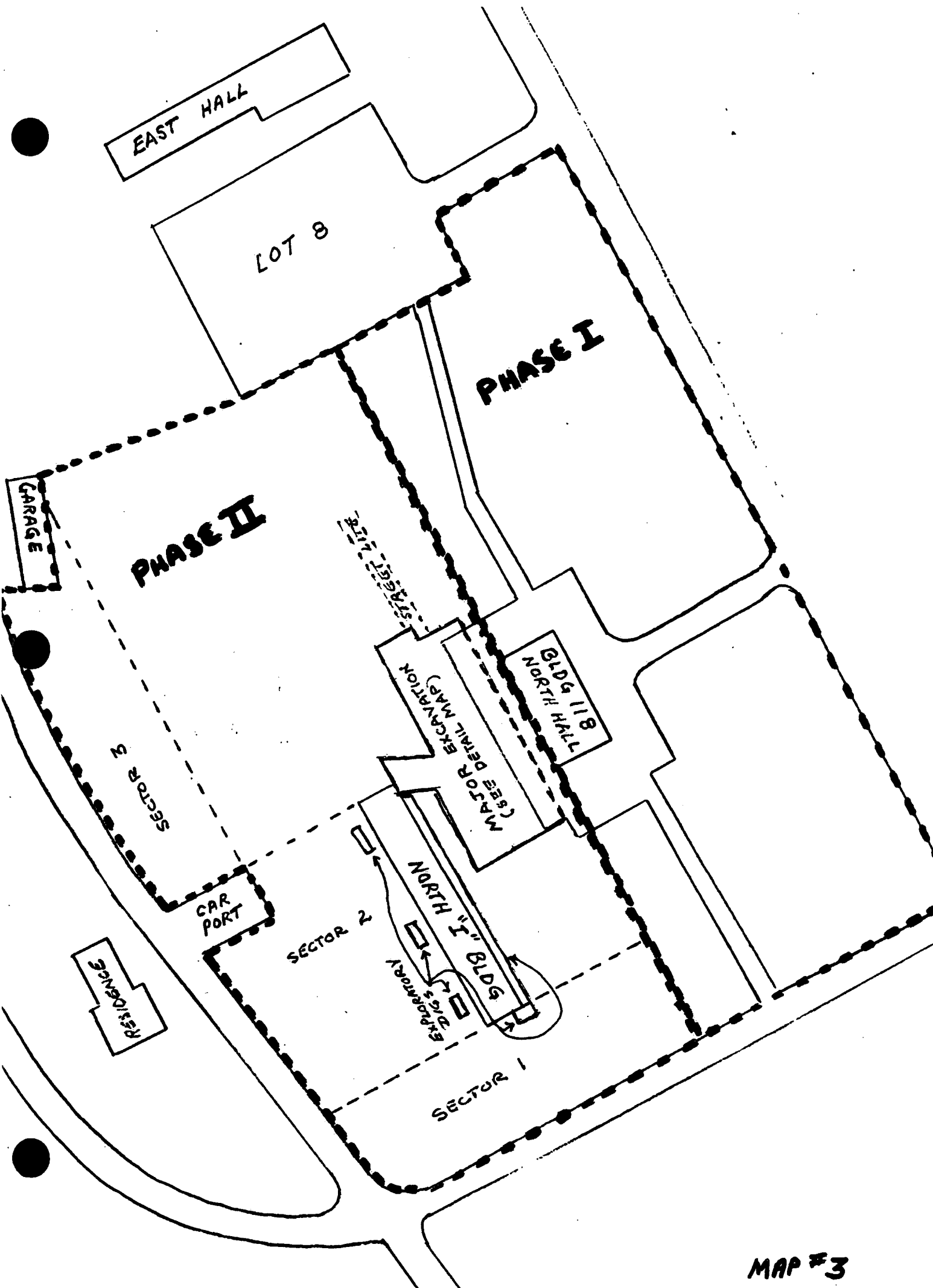


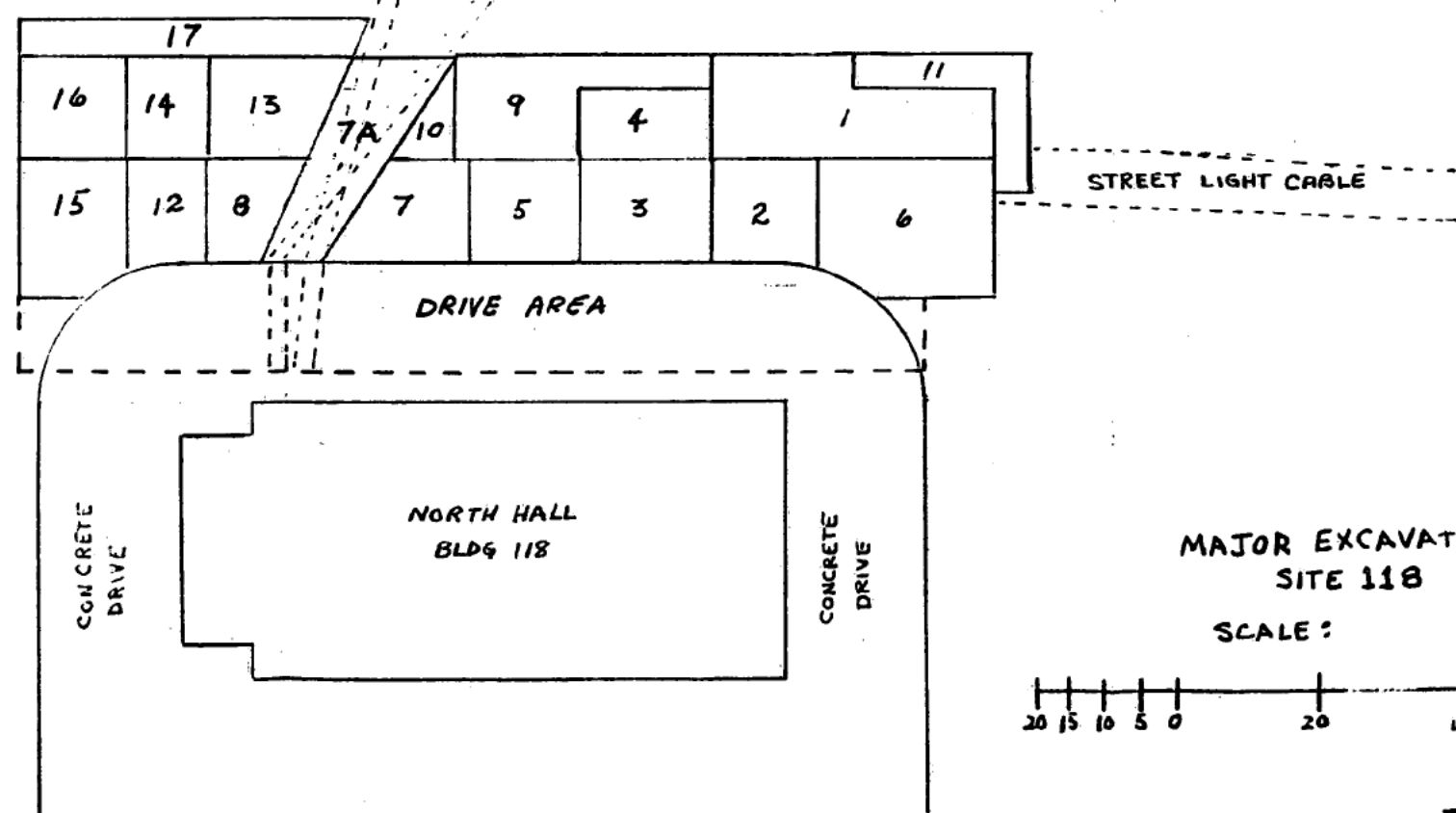
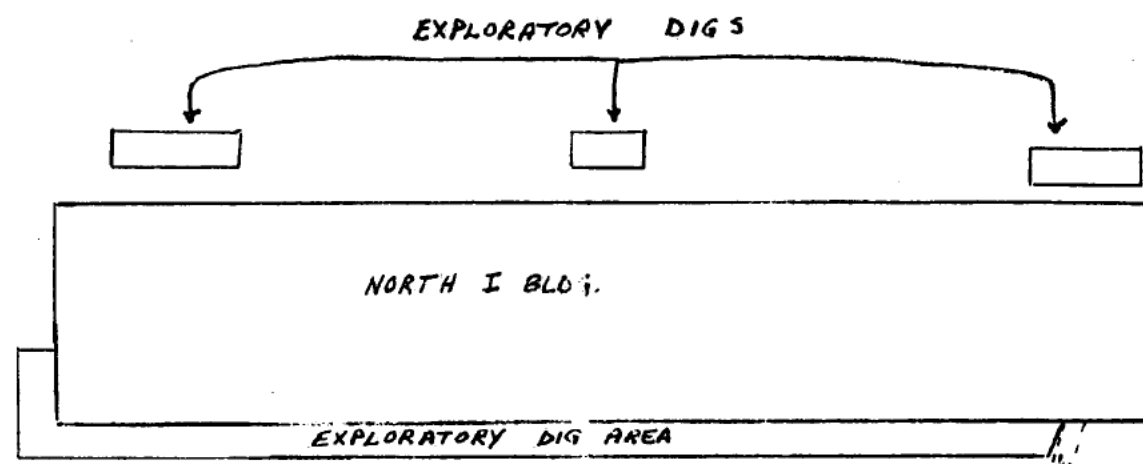
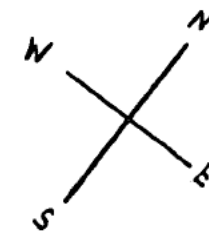
MAP #1

- STORM DRAIN
- W — WATER LINE
- O — SEWER LINE
- ••••• ELECTRIC LINE
- - - TELEPHONE LINE
- F FUEL TANK (REMOVED)
- T TREE REMOVED

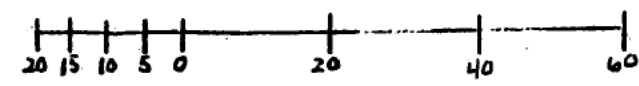


MAP #2

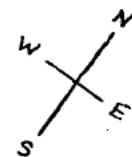
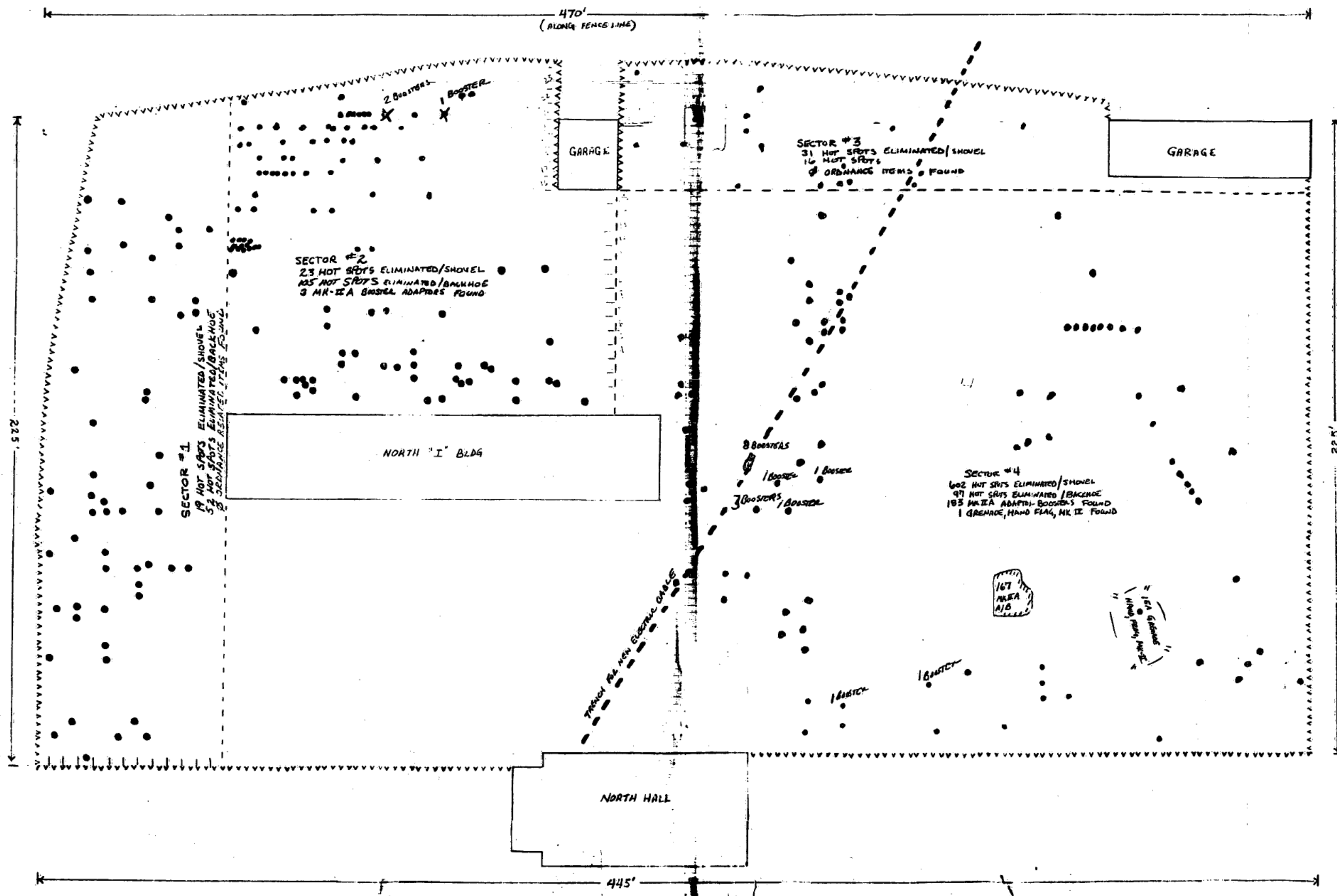




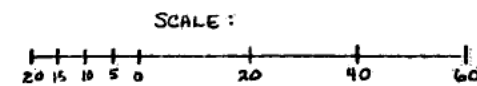
MAJOR EXCAVATION MAP.
SITE 118
SCALE:



MAP #4



MAGNETOMETER PLOTTING MAP
SITE 118



MAP #5

ATTACHMENT 8

DATE	ORDNANCE	LOCATION (REF ATTACHED MAP)	CONDITIONS	QUANTITY	REMARKS (REF DAILY LOG)
27 JUN 91	MKIIA BOOSTER ADAPTOR	SITE # 1	UNFUSED/RUSTED	712	
01 JUL 91	" " "	1	" "	454	
02 JUL 91	" " "	1	" "	678	
03 JUL 91	" " "	1	" "	189	
05 JUL 91	" " "	1	" "	483	
08 JUL 91	" " "	1	" "	1130	
09 JUL 91	" " "	1	" "	135	FINISHED #1
10 JUL 91	" " "	2	" "	870	
11 JUL 91	" " "	2	" "	39	TREE PROBLEM
11 JUL 91	" " "	3	" "	1129	
16 JUL 91	" " "	3	" "	1220	
17 JUL 91	" " "	3	" "	432	
19 JUL 91	" " "	3	" "	1000	
22 JUL 91	" " "	3	" "	1578	
23 JUL 91	" " "	3	" "	1309	
24 JUL 91	" " "	3	" "	80	FINISHED #3
24 JUL 91	" " "	4	" "	851	TAK
25 JUL 91	" " "	4	" "	1097	
30 JUL 91	" " "	4	" "	216	
31 JUL 91	BOOSTER ADAPTOR	4	" "	1	MODEL UNIK
31 JUL 91	ALPHA BOOSTER ADAPTOR	4	" "	29	FINISHED #4
31 JUL 91	" " "	5	" "	307	
01 AUG 91	" " "	5	" "	1336	
02 AUG 91	" " "	5	" "	162	
05 AUG 91	" " "	5	" "	154	FINISHED #5
05 AUG 91	" " "	2	" "	241	
06 AUG 91	" " "	2	" "	917	
07 AUG 91	" " "	2	" "	267	
08 AUG 91	" " "	2	" "	15	FINISHED #2
08 AUG 91	" " "	6	" "	189	
13 AUG 91	" " "	6	" "	632	
14 AUG 91	" " "	6	" "	148	ROOTS
15 AUG 91	" " "	6	" "	10	FINISHED #6
15 AUG 91	" " "	7	" "	572	
16 AUG 91	" " "	7	" "	1804	
19 AUG 91	" " "	7	" "	326	FUEL TANK
20 AUG 91	" " "	7	" "	135	SIDEWALK
21 AUG 91	" " "	7	" "	271	RADAR
22 AUG 91	" " "	7	" "	729	
27 AUG 91	" " "	7	" "	222	TANK REMOVED
28 AUG 91	" " "	7	" "	949	
29 AUG 91	" " "	7	" "	527	
30 AUG 91	" " "	7	" "	1082	
03 SEP 91	" " "	7	" "	681	
24 SEP 91	" " "	7	" "	1008	CABLES/CORRUPT
25 SEP 91	" " "	7	" "	421	TERMINATED
29 SEP 91	" " "	EXPL. DIG. I. 1027	" "	4	EXPLOSIVE

DATE	ORDNANCE	LOCATION (REF. MAP)	CONDITION	QUANTITY	REMARKS (REF. DAILY LOG)
09 SEP 91	MK II A BOOSTER ADAPTOR	8	UNUSED/RUSTED	206	
10 SEP 91	"	8	"	619	
11 SEP 91	"	8	"	225	
12 SEP 91	"	8	"	1369	
17 SEP 91	"	8	"	1267	ACTIVE FUEL TANK
18 SEP 91	"	8	"	1074	
19 SEP 91	"	8	"	1369	
20 SEP 91	"	8	"	1290	BACKFILL/INCOMPLETE
23 SEP 91	"	POWER LINE (7A)	"	73	
24 SEP 91	"	" (7A)	"	11	FINISHED
26 SEP 91	"	TELE CABLE (7A)	"	8	FINISHED
02 OCT 91	"	9	"	101	FINISHED
04 OCT 91	"	8	"	131	FUEL TANK TEST
07 OCT 91	"	11	"	23	FINISHED
" " "	"	STREET LIFE	"	31	
" " "	"	8	"	95	PREP WORK
08 OCT 91	"	STREET LIFE	"	12	FINISHED
" " "	"	8	"	208	
09 OCT 91	"	8	"	609	
10 OCT 91	"	12	"	1370	
15 OCT 91	"	8	"	236	
" " "	"	12	"	649	
" " "	"	13	"	255	
16 OCT 91	"	12	"	977	
" " "	"	13	"	392	
17 OCT 91	"	12	"	966	
" " "	"	13	"	1035	TRANSPORT X2
18 OCT 91	"	12	"	1773	
" " "	"	13	"	817	TRANSPORT X2
21 OCT 91	"	12	"	462	TRANSPORT X2
" " "	"	13	"	2192	
22 OCT 91	"	12	"	1400	AROUND STUMP
23 OCT 91	"	12	"	1403	STUMP AGAIN
24 OCT 91	"	8	"	302	UNDER/BEHIND FUEL TANK
27 OCT 91	MK III BOOSTER	12	"		SAME AS 30 JUL 91
" " "	MK II A BOOSTER/ADAPTOR	12	"	1596	STILL AROUND STUMP
30 OCT 91	"	12	"	2443	STUMP OUT
" " "	"	13	"	63	
31 OCT 91	"	12	"	1313	
01 NOV 91	"	12	"	1078	
" " "	"	13	"	200	
04 NOV 91	"	12	"	1305	
05 NOV 91	"	12	"	3000	TRANSPORT X2
06 NOV 91	"	12	"	2500	
" " "	"	13	"	644	TRANSPORT X2
07 NOV 91	"	12	"	2856	FINISHED TRANSPORT X2
" " "	"	13	"	1240	

DATE	ORDNANCE	LOCATION (REF MAP)	CONDITION	QUANTITY	REMARKS (REF DAILY LOG)
13 NOV 91	11K11A BOMBS/ADP	13	RUSTED/UNFUSED	856	FINISHED LEVEL #1
" " "	" " "	14	" "	487	
14 NOV 91	" " "	14	" "	2001	TRANSPORT X2
15 NOV 91	" " "	14	" "	2022	TRANSPORT X2 LEVEL #1
18 NOV 91	" " "	15	" "	1011	FINISHED LEVEL #1
19 NOV 91	" " "	16	" "	841	FINISHED LEVEL #1
20 NOV 91	" " "	13 (LVL 2)	" "	373	
" " "	" " "	7A	" "	103	
" " "	" " "	17	" "	79	
21 NOV 91	" " "	17	" "	9	
" " "	" " "	13 (LVL 2)	" "	1122	TRANSPORT X2
22 NOV 91	" " "	12 (LVL 2)	" "	65	FINISHED LVL #2
" " "	" " "	15 (LVL 2)	" "	802	
25 NOV 91	" " "	7A	" "	492	
" " "	" " "	13 (LVL 2)	" "	300	
26 NOV 91	" " "	7A	" "	EXP 101	SHORING TODAY
27 NOV 91	" " "	7A	" "	92	
" " "	" " "	12 (LVL 2)	" "	11	STUMP DESTROYED
" " "	" " "	13 (LVL 2)	" "	14	STREET LITE CONCRETE
9 DEC 91	" " "	7A	" "	113	
" " "	" " "	13 (LVL 2)	" "	22	FINISHED LEVEL #2
10 DEC 91	" " "	14 (LVL 2)	" "	152	FINISHED LEVEL #2
" " "	" " "	16 (LVL 2)	" "	32	
11 DEC 91	" " "	15 (LVL 2)	" "	71	FINISHED LEVEL #2
" " "	" " "	16 (LVL 2)	" "	28	FINISHED LEVEL #2
19 DEC 91	" " "	DRIVE	" "	23	ALONG UTILITY LINE
08 JAN 92	" " "	DRIVE	" "	372	" " "
09 JAN 92	" " "	DRIVE	" "	33	" " "
10 JAN 92	" " "	DRIVE	" "	103	" " "
14 JAN 92	" " "	DRIVE	" "	40	" " "
15 JAN 92	" " "	DRIVE	" "	50	" " "
21 JAN 92	" " "	DRIVE	" "	5	" " "
22 JAN 92	" " "	DRIVE	" "	4	SCATTERED
23 JAN 92	" " "	DRIVE	" "	122	"
27 JAN 92	" " "	DRIVE	" "	57	"
28 JAN 92	" " "	DRIVE	" "	22	"
04 FEB 92	" " "	DRIVE	" "	29	"
05 FEB 92	" " "	DRIVE	" "	69	"
11 FEB 92	" " "	DRIVE	" "	132	"
12 FEB 92	" " "	DRIVE	" "	87	"
13 FEB 92	" " "	DRIVE	" "	266	POCKET ADJACENT AREA 2
14 FEB 92	" " "	DRIVE	" "	18	ALONG OLD TELE CABLE
18 FEB 92	" " "	17	" "	110	
" " "	" " "	SECTOR #2	" "	2	SEE PLOT MAP
19 FEB 92	" " "	SECTOR #2	" "	1	SEE PLOT MAP
" " "	" " "	7A	" "	9	RAIN WASHOUT
21 FEB 92	" " "	TRAIL	" "	16	

DATE	ORDNANCE	LOCATION (REF MAP)	CONDITION	QUANTITY	REMARKS
25 FEB 92	1AKIA ADAPTION/ROCK	DRIVE	UNFUSED/RUSTY	13	RAIN WASHOUT
03 MAR 92	" " "	DRIVE	" "	4	
05 MAR 92	" " "	POWELL CREEK TRENCH	" "	8	SECTION #4
11 MAR 92	" " "	7A	" "	13	RAIN WASHOUT
18 APR 92	GRENADIE, HAND MKII	SECTION #4	UNFUSED/RUSTY	1	*****
19 APR 92	AKIA ADAPTION/ROCK	SECTION #4	" "	167	
" " "	" " "	7A	" "	64	INSTANT BRACKING
26 MAR 92	" " "	7A	" "	3	JACK HAMMER
31 MAR 92	" " "	7A	" "	3	UNDER DRIVE
" " "	" " "	SECTION #4	" "	2	
01 APR 92	" " "	7A	" "	18	UNDER DRIVE
03 APR 92	" " "	7A	" "	40	UNDER DRIVE
06 APR 92	" " "	7A	" "	138	UNDER DRIVE
07 APR 92	" " "	SECTION #4	" "	4	
" " "	" " "	7A	" "	22	UNDER DRIVE
08 APR 92	" " "	7A	" "	1	" "
09 APR 92	" " "	7A	" "	2	" "
13 APR 92	" " "	SECTION #4	" "	2	
14 APR 92	MINI 120/120N-EXP	7A	1 INERT METAL	305	
16 APR 92	AKIA ADAPTION/ROCK	7A	UNFUSED/RUSTY	34	WITHIN CONCRETE
17 APR 92	" " "	G.A.	" "	15	12 IN FILL DIRT
20 APR 92	" " "	G.A.	" "	25	UNDER SIDEWALK
21 APR 92	" " "	G.A.	" "	180	" "
22 APR 92	" " "	"	"	27	"
23 APR 92	" " "	"	"	17	"
24 APR 92	" " "	"	"	10	"
27 APR 92	" " "	"	"	3	"

EXCAVATION AREA SYNOPSIS BY AREA TITLE NUMBER

MUNITIONS RECOVERED (MK-II BOOSTER/ADAPTOR)

AREA #1

27 JUN 91	712
01 JUL 91	654
02 JUL 91	678
03 JUL 91	189
05 JUL 91	483
08 JUL 91	1130
09 JUL 91	135
TOTAL	3981

AREA #2

10 JUL 91	870
11 JUL 91	89
05 AUG 91	241
06 AUG 91	917
07 AUG 91	267
08 AUG 91	15
TOTAL	2399

AREA #3

11 JUL 91	1129
16 JUL 91	1220
17 JUL 91	432
19 JUL 91	1000
22 JUL 91	1578
23 JUL 91	1309
24 JUL 91	80
TOTAL	6748

AREA #4

24 JUL 91	851
25 JUL 91	1097
30 JUL 91	216
**30 JUL 91	1 EA MARK-III BOOSTER/ADAPTOR
31 JUL 91	29
TOTAL	2194

AREA #5

31 JUL 91	307
01 AUG 91	1336
02 AUG 91	1162
05 AUG 91	154
TOTAL	2959

AREA #6

08 AUG 91	1189
13 AUG 91	632
14 AUG 91	148
15 AUG 91	10
TOTAL	1979

AREA #7

15 AUG 91	572
16 AUG 91	1804
19 AUG 91	326
20 AUG 91	135
21 AUG 91	271
22 AUG 91	729
27 AUG 91	222
28 AUG 91	949
29 AUG 91	527
30 AUG 91	1082
03 SEP 91	681
04 SEP 91	1008
05 SEP 91	421
TOTAL 8727	

AREA #8

09 SEP 91	206
10 SEP 91	619
11 SEP 91	225
12 SEP 91	1369
17 SEP 91	1267
18 SEP 91	1074
19 SEP 91	1369
20 SEP 91	1290
04 OCT 91	131
07 OCT 91	95
08 OCT 91	208
09 OCT 91	609
15 OCT 91	236
24 OCT 91	302
TOTAL 9000	

AREA #9

02 OCT 91	101 TOTAL
-----------	-----------

AREA #11

07 OCT 91	23 TOTAL
-----------	----------

AREA #12 (LEVEL 1)

10 OCT 91	1370
15 OCT 91	649
16 OCT 91	977
17 OCT 91	966
18 OCT 91	1773
21 OCT 91	462
22 OCT 91	1400
23 OCT 91	1403
/ **29 OCT 91 1 EA. MK-III BOOSTER/ADAPTOR	
29 OCT 91	1596
30 OCT 91	2443
31 OCT 91	1313
01 NOV 91	1078
04 NOV 91	1305
05 NOV 91	3000
06 NOV 91	2500
07 NOV 91	2856
TOTAL 25092	

AREA #13 (LEVEL 1)

15 OCT 91	255
16 OCT 91	392
17 OCT 91	1035
18 OCT 91	877
21 OCT 91	2192
30 OCT 91	63
01 NOV 91	200
06 NOV 91	644
12 NOV 91	1240
13 NOV 91	856
	TOTAL 7754

AREA #14 (LEVEL 1)

13 NOV 91	487
14 NOV 91	2001
15 NOV 91	2022
	TOTAL 4510

AREA #15 (LEVEL 1)

18 NOV 91	1011
	TOTAL

AREA #16 (LEVEL 1)

19 NOV 91	841
	TOTAL

AREA #12 (LEVEL 2)

22 NOV 91	65
27 NOV 91	11
	TOTAL 76

AREA #13 (LEVEL 2)

20 NOV 91	373
21 NOV 91	1122
25 NOV 91	300
27 NOV 91	14
09 DEC 91	22
	TOTAL 1831

AREA #14 (LEVEL 2)

10 DEC 91	152
	TOTAL

AREA #15 (LEVEL 2)

22 NOV 91	802
11 DEC 91	71
	TOTAL 873

AREA #16 (LEVEL 2)

10 DEC 91	32
11 DEC 91	28
	TOTAL 60

AREA #17

20 NOV 91	79
21 NOV 91	9
18 FEB 92	110
	TOTAL 198

NORTH "I" BLDG
09 SEP 91

4 TOTAL

EET LIGHT CABLE
- 07 OCT 91
08 OCT 91

31
12
TOTAL 43

AREA #7A

23 SEP 91	73
24 SEP 91	11
26 SEP 91	8
20 NOV 91	103
25 NOV 91	492
26 NOV 91	101
27 NOV 91	92
09 DEC 91	113
19 FEB 92	9

DRIVE AREA

19 DEC 91	23
08 JAN 92	372
09 JAN 92	33
10 JAN 92	103
14 JAN 92	40
15 JAN 92	50
21 JAN 92	5
22 JAN 92	4
23 JAN 92	12
27 JAN 92	5
28 JAN 92	22
04 FEB 92	29
05 FEB 92	69
11 FEB 92	132
12 FEB 92	87
13 FEB 92	266
14 FEB 92	18
24 FEB 92	16
25 FEB 92	13
03 MAR 92	4

SECTOR #2

18 FEB 92	2
19 FEB 92	1

TOTAL 3

AS OF 04 MARCH 1992, THE TOTAL NUMBER OF EXPLOSIVE FILLED MUNITIONS RECOVERED FROM THIS SITE IS 82,762 MK-IIA BOOSTER ADAPTORS AND 2 MARK-III BOOSTER ADAPTORS. THE NET EXPLOSIVES WEIGHT OF THESE ITEMS IS 22,760 LBS.

ATTACHMENT 9

Site #17

Completed
10 Oct 91
(16)



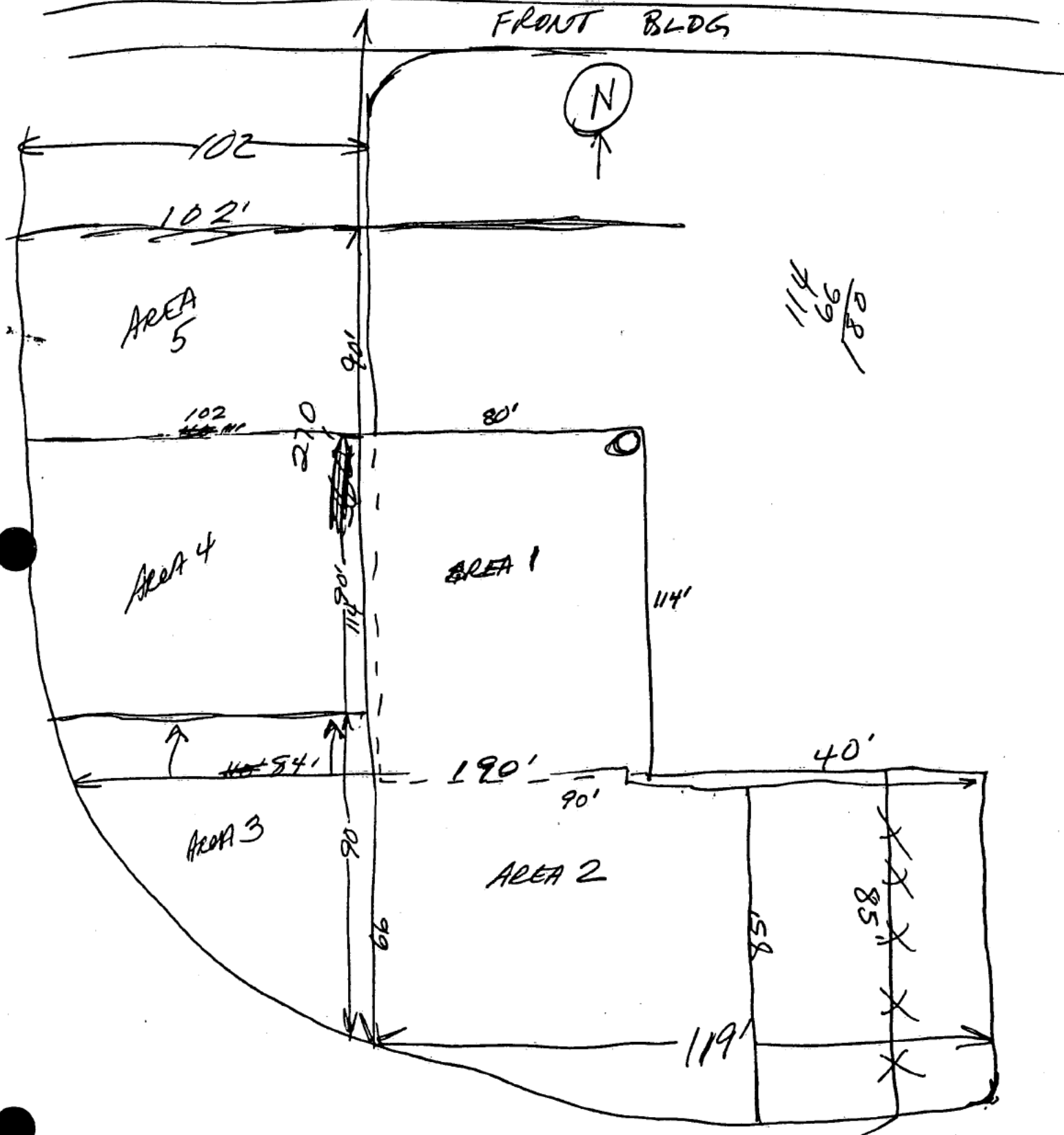
AREA 10



3
8 1/2
2 1/2
5 1/2
6 1/2
1 1/2



By _____ Date _____ Subject _____ Sheet No. _____ of _____
Chkd. By _____ Date _____ Proj. No. _____





INTERNATIONAL
TECHNOLOGY
CORPORATION

~~1500~~ ~~1100~~
1000
THRU LANE 10

SQ = 3.16 FT
AREA

138 537
108 1269
136
557

501
175
712 #6

$$\begin{array}{r} 130 \\ 106 \\ \hline 327 \end{array} \bigcirc$$
$$S_Q = 3.16 \text{ FT}$$

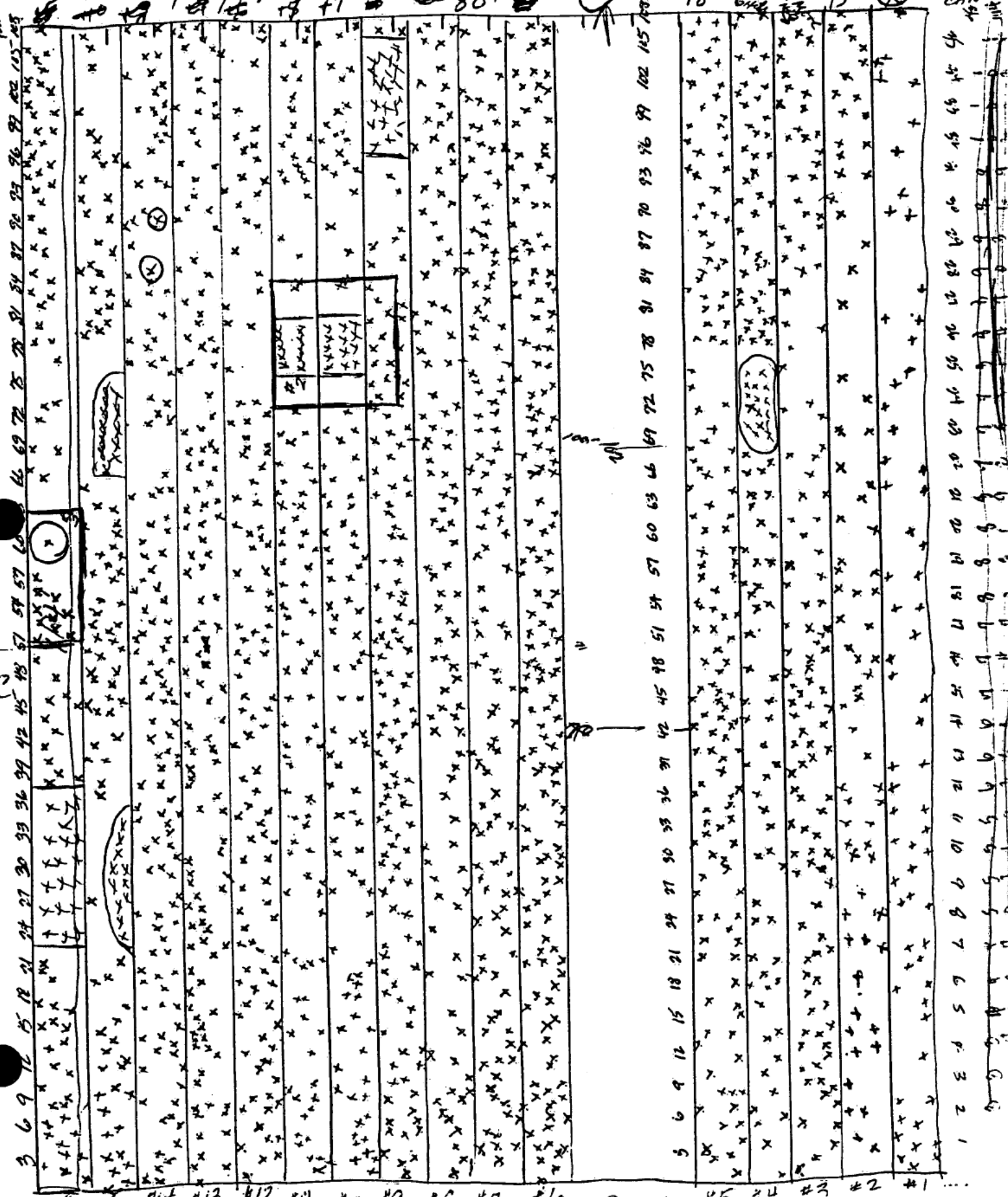
Subject, ~~SITE 1~~ ^{PREP} ~~SITE NO 17~~ ³⁵¹

Sheet No. 1 of 1

202
1996 MTS Date

CHK'd By 101 149 Date 1

Proj. No. 66
 106 = 145 (X) TRASH



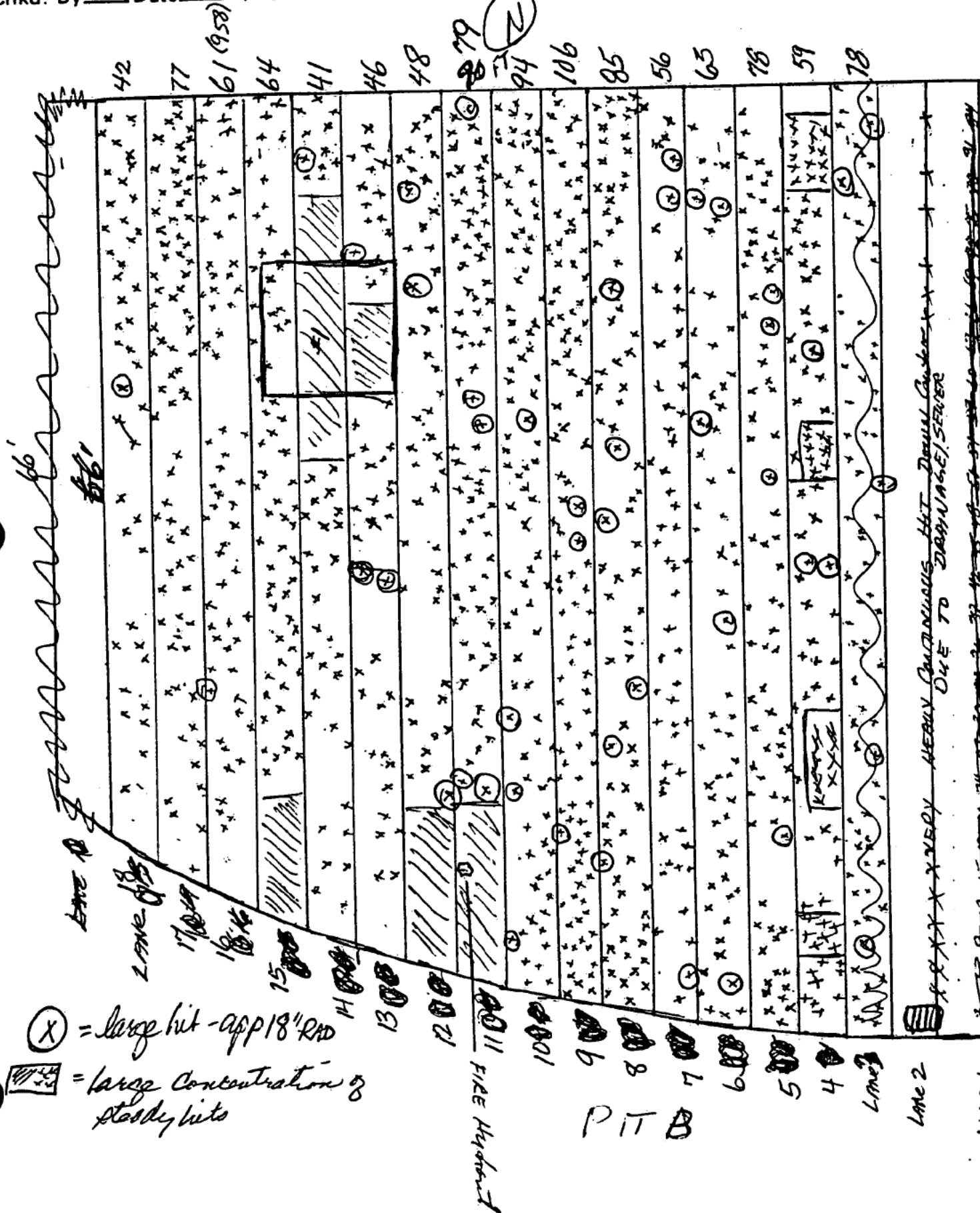
751 ARN 2001

TE

PITA

x	x	x	x	x	x	x
#5	#4	#3	#2	#1	...	

y _____ Date _____ Subject AREA 2, SITE 17 Sheet No. 2 of _____
Chkd. By _____ Date EA SQ = 3' APP Proj. No. _____

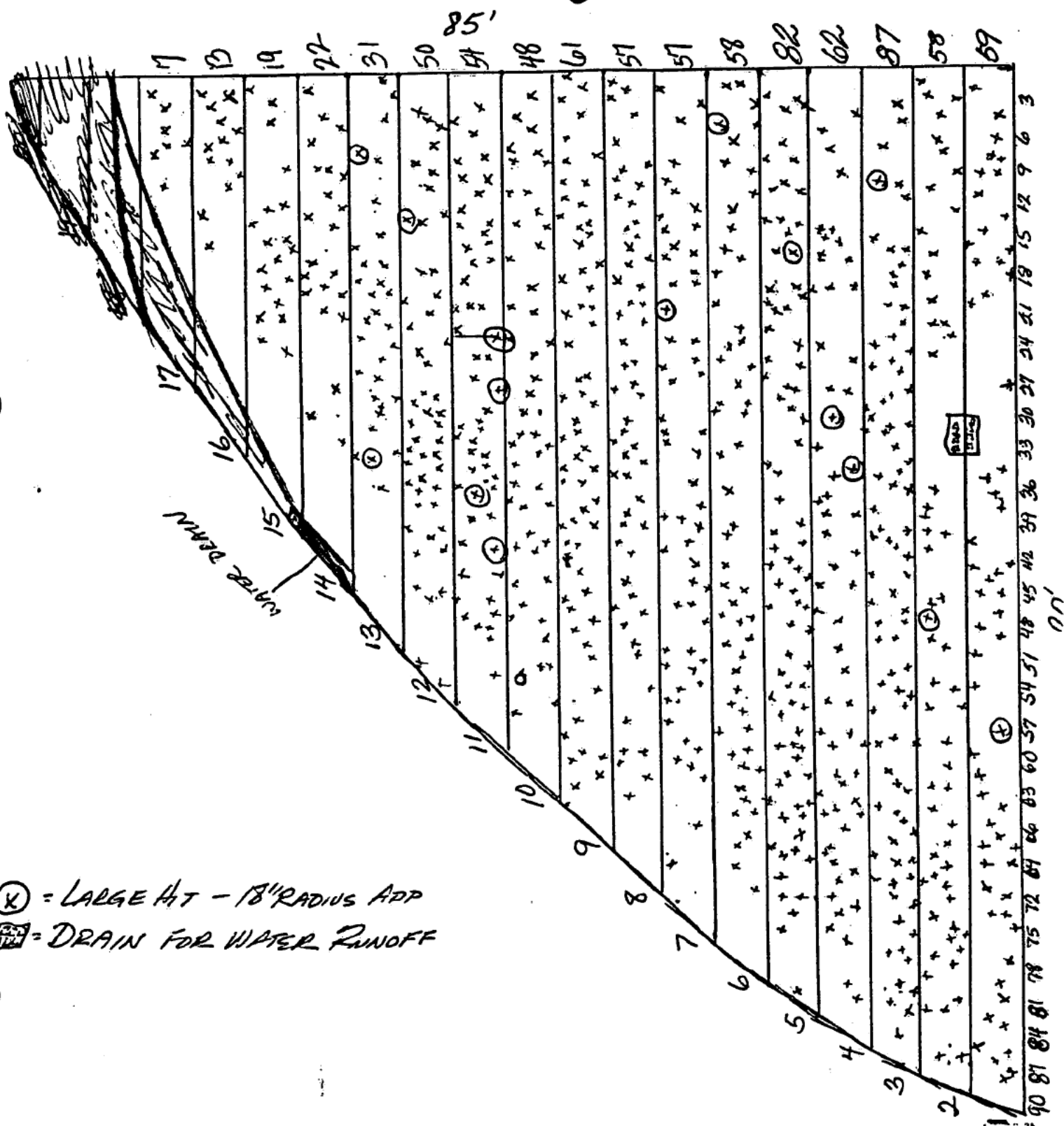


(X) = large hit - app 18" rad

[Shaded Box] = large concentration of steady hits

_____ Date _____ Subject AREA 3, SITE 17 Sheet No. 3 of _____
Chkd. By _____ Date EA SQ = 3' APP, 5' SWEEP LANES Proj. No. _____

825 HITS

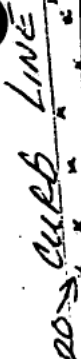


(x) = LARGE HIT - 18" RADIUS APP
[DRAIN] = DRAIN FOR WATER RUNOFF



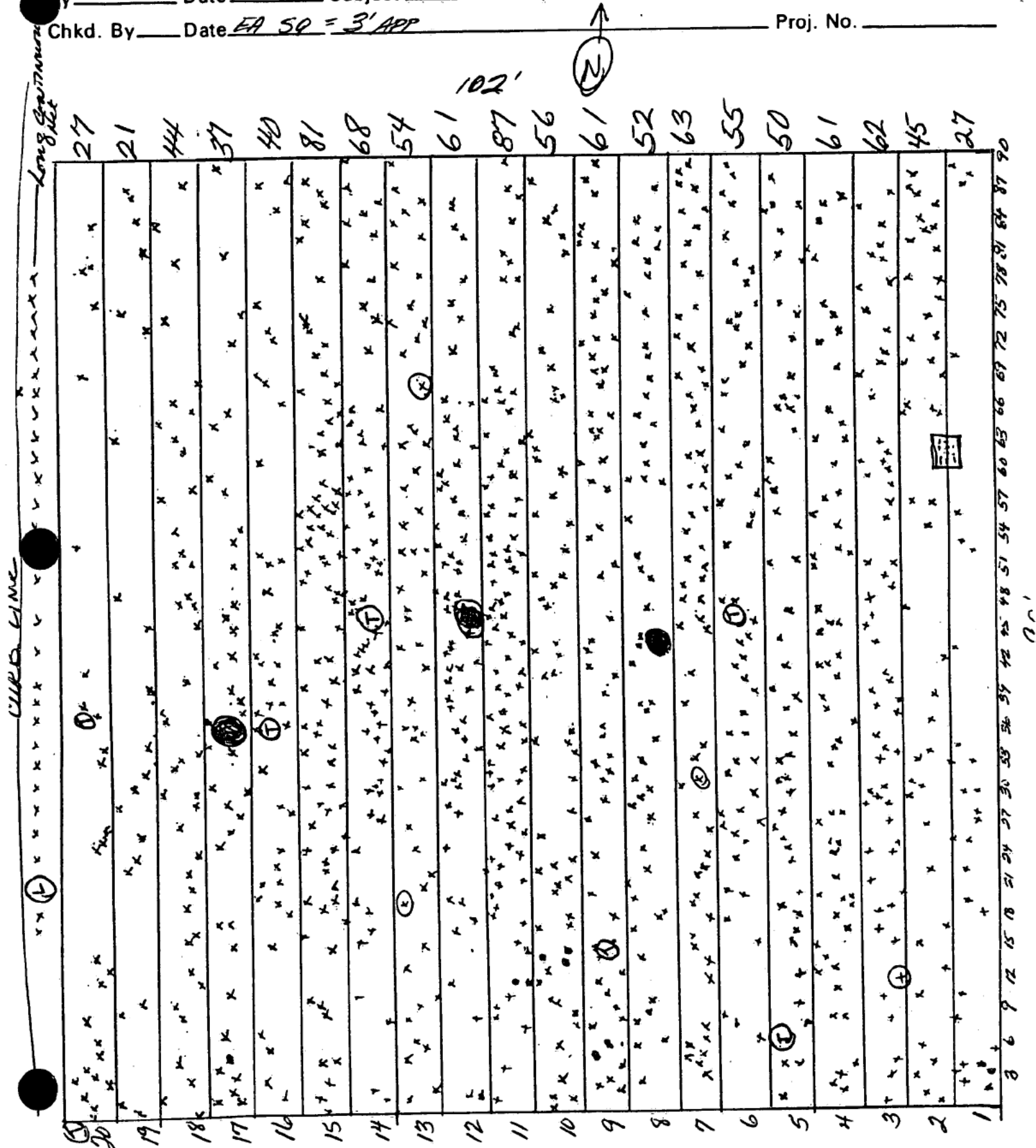
Chkd. By _____ Date FA SQ = 3' APP

Proj. No



⊗ = HEAVY / CONTINUOUS HTS / 18" R APP

y 1052 HITS Date _____ Subject AREA 5, SITE 17 Sheet No. 5 of _____
Chkd. By _____ Date EA 50 = 3' APP Proj. No. _____



(X) = HEAVY PENETRATOR HIT 18" R
(T) = TREE
(1) = 1"

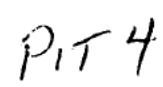
**INTERNATIONAL
TECHNOLOGY
CORPORATION**

Date _____

Subject

Sheet No. 2

Date _____

Proj. No.

NOTE: IVY COVERED ESCARPMENTS VERY DIFFICULT TO MAG EFFECTIVELY.
THE MAGS WERE EXTREMELY AFFECTED BY STEEL WALLS OF BLDGS.

② = LIGHT

⑤ = 36V K: R

⊗ = Continuous Heavy Use / 18" R APP



By _____ Date _____ Subject AREA 14, SITE 14 Sheet No. 7 of _____
Chkd. By _____ Date EA SQ = 5' APP Proj. No. _____

5' LANES

505 HITS

PIT 5



- ⊙ = HEAVY HITS
- Ⓢ = SIGN
- Ⓢ = SEWER
- Ⓛ = LIGHT
- Ⓣ = TREE

By _____ Date _____ Subject PIT A, SITE 17 Sheet No. 1 of 5
Chkd. By _____ Date 1/2" = 1' Proj. No. _____

1) 73 METALLIC OBJECTS RECOVERED

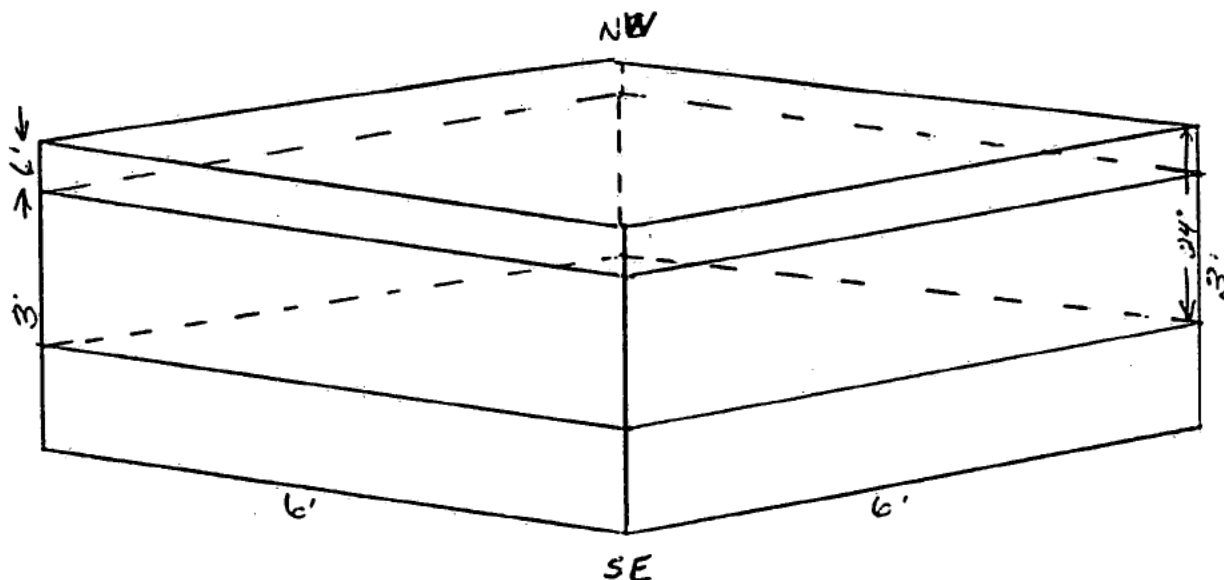
A. AT APP 24" BELOW SURFACE, MAJORITY OF HEAVY CAST IRON FRAGMENTS WERE FOUND, SPREAD UNIFORMLY THRU-OUT THE PIT.

B. AT APP 6" BELOW SURFACE A LAYER OF TOP SOIL & FILL INCLUDING A LAYER OF MAGNETIC ROCKS.

C. BETWEEN THE 6" & 24" LAYER, ~~SO~~ MANY NAILS, COKE CANS, REBAR, + METAL STRAPPING ITEMS WERE LOCATED ACROSS THE WIDTH & DEPTH OF THE PIT.

D. CONCENTRATIONS OF METAL FRAGMENTS WERE NOT PIN POINTED IN ANY SPECIFIC AREA, RATHER EVENLY DISPERSED.

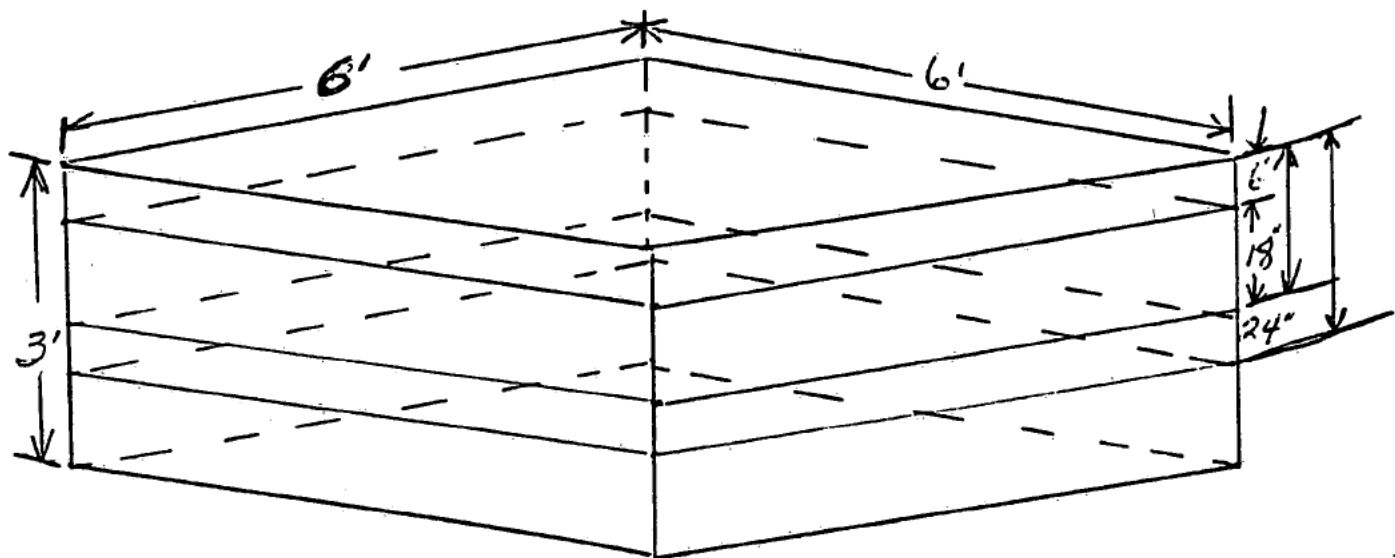
E. NO SUBSURFACE UEN/OEN RELATED SCRAP RECOVERED.





By _____ Date _____ Subject PIT B, SITE 17 Sheet No. 2 of 5
Chkd. By _____ Date 1/2" = 1' Proj. No. _____

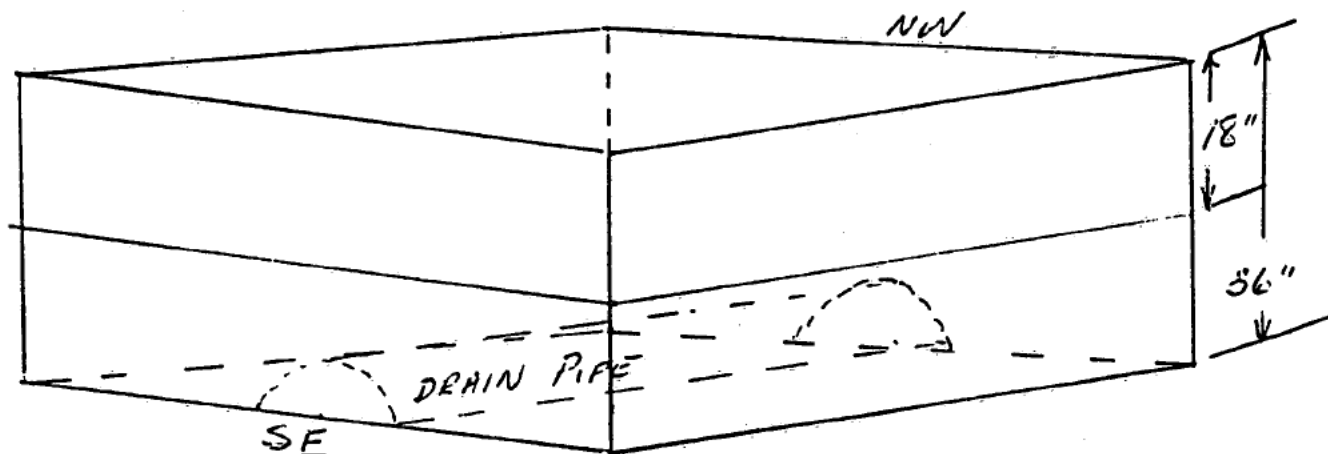
1. 1330 ITEMS RECOVERED, ALL ARE SCRAP HEAVY METAL ITEMS, PRIMARILY OLD HINGES, SPRINGS, PINS, & YOKE CLAMPS ASSOCIATED WITH DOORS ON OLD STYLE AMMO MAGAZINES FOR STORAGE.
2. AT APP 18" BELOW SURFACE WE ENCOUNTERED SCATTERED POCKETS OF WHAT APPEARS TO BE DRIVE FIT PINS THROUGHOUT THE PIT.
3. AT APP 24" BELOW SURFACE WE ENCOUNTERED SEVERAL HEAVY HINGES, SPRINGS, & YOKE CLAMPS EVENLY DISPERSED, SLIGHTLY HEAVIER IN THE CENTER OF THE PIT.
4. CONCENTRATIONS, OTHER THAN CLUMPS OF THE DRIVE PINS, WERE NOT NOTICEABLE SPECIFIC IN LOCATION.
5. NO SUBSURFACE DEN/DEN RELATED SCRAP RECOVERED.





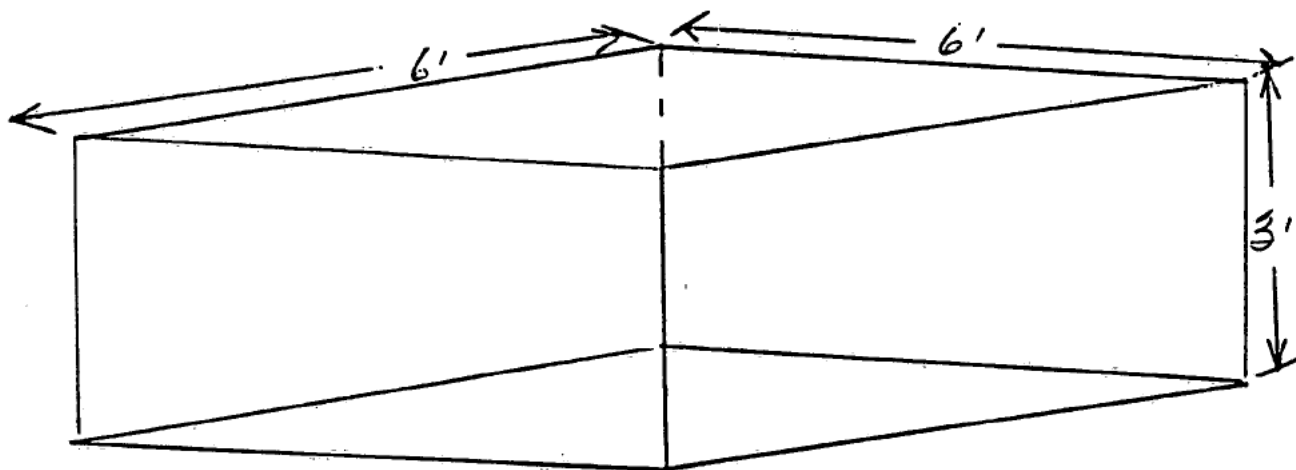
By _____ Date _____ Subject PITC. AREA 17 Sheet No. 3 of 5
Chkd. By _____ Date 1/2" = 1' Proj. No. _____

1. 39 ITEMS RECOVERED, ALL WERE SCRAP METAL, MANY PIECES OF HEAVY $\frac{1}{4}$ " WIRE, REBAR, 55 GAL DRUM LID, + METAL RING.
2. IN THE CENTER OF THE PIT AT THE 3' LEVEL WE LOCATED A LARGE CONCRETE DRAIN PIPE THAT RAN COMPLETELY THRU THE PIT CONNECTING 2 GROUND LEVEL DRAINS OUTSIDE OF PITC.
3. MAJORITY OF THE ITEMS WERE RECOVERED NO MORE THAN 18" BELOW THE SURFACE.
4. CONCENTRATIONS WERE NOT SPECIFIC IN LOCATION.
5. NO SUBSURFACE DETU/NON-DEU RELATED SCRAP RECOVERED.



_____ Date _____ Subject AREA 1^{6th} SITE 17 Sheet No. 4 of 5
Chkd. By _____ Date 1/2" = 1' Proj. No. _____

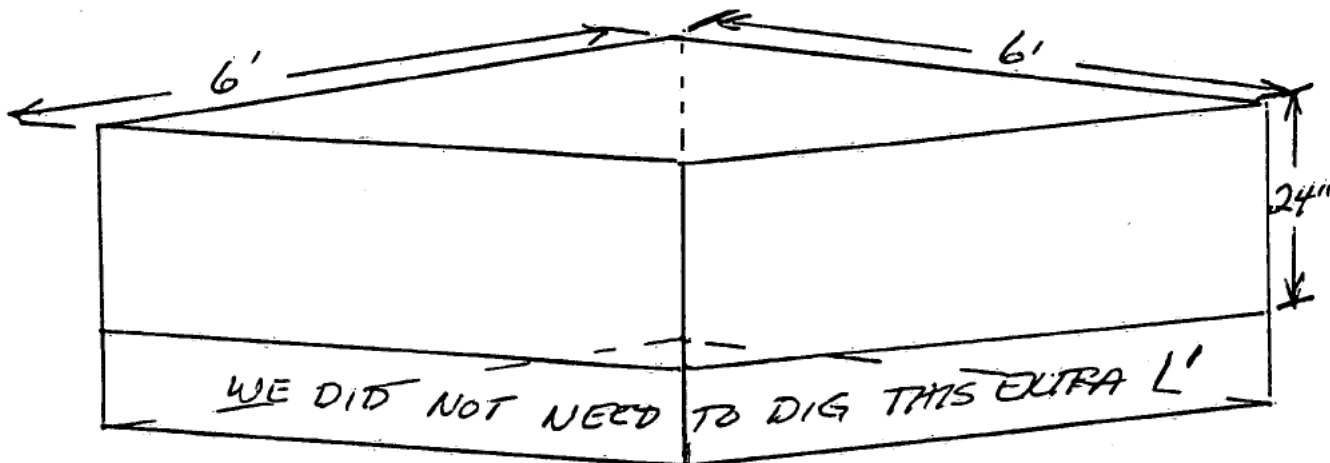
1. THERE WERE 39 RECOVERED ITEMS FOR THIS AREA.
2. ALL ITEMS WERE CONSTRUCTION MATERIALS i.e., REBAR (1-10' FT PIECE, 1-6' FT PIECE, & 1-4' FT PIECE), TIE WIRE, NAILS, ETC. SEVERAL LARGE CHUNKS OF CONCRETE W/ WIRE & REBAR IN IT.
3. THERE WAS NO SPECIFIC LOCATION OR CONCENTRATION OF HITS. THIS AREA WAS EVIDENTLY A CONSTRUCTION BACKFILL AREA.
4. THERE WERE NO OEW/OEW-RELATED SCRAP ITEMS LOCATED.





By _____ Date _____ Subject AREA 7, SITE 17 Sheet No. 5 of 5
Chkd. By _____ Date 1/2" = 1' Proj. No. _____

1. 162 ITEMS WERE RECOVERED FROM THE PIT DUG IN AREA 7, SITE 17.
2. ITEMS RECOVERED WERE: BAYONET, END OF M1 CARBINE BARREL, 60MM MORTAR FINS, ASSORTED PIECES OF ANGLE IRON, SEVERAL PIECES OF PIPE + ASSOCIATED FITTINGS, SAFETY GLASS WITH WIRE LACED THRU IT, SPARK PLUG, MOTORCYCLE KICK STAND, FOOT PEGS, 55 GAL BARREL (EMPTY), OLD FIRE EXTINGUISHER, CABLE, & MISC. BOLTS, NUTS, NAILS.
3. THERE WAS NO SPECIFIC LOCATION OR CONCENTRATION OF HITS. WE ONLY DUG DOWN TO APPROXIMATELY 24" & DETECTED NO FURTHER MAGNETIC HITS.
4. WE DID LOCATE 1 PC OF OEI-RELATED SCRAP - 1 EA SET OF 60MM MORTAR FINS.



ATTACHMENT 10

**EOD TECHNOLOGY
FORMER RARITAN ARSENAL PROJECT**

18 September 1991

SUBJECT: Memorandum for Record (Gym Site)

On 17 Sep 91 we returned to work from a four day break. During the break, a hand grenade (empty) had been found on the Middlesex College Campus in the area of the tennis courts. As I was checking the sites, I received a call from Dr. Chan, the Project Manager for IT, stating that Mr. Bob Nore, ACE, Huntsville, wanted to visit the site of the hand grenade discovery. We met at approximately 1000 hrs.

The people present at the meeting on site (The Gym Site) were:

- Dr. L. Chan, IT Corp.
- Mr. F. Javorka, IT Corp.
- Mr. R. Nore, ACE, Huntsville, AL
- Mr. T. McLaren, EODT

Mr. Nore was concerned that the site get immediate appropriate attention. After walking the site, the plan presented by Mr. Nore was to:

- Surface Sweep the area.
- Check the immediate grenade location w/ magnatomiter.
- Check any other suspicious areas w/ magnatomiter.
- Record "Hits".

The team from Site # 17 (Hank Hubbard, et al) was given this mission. At approximately 1100 hrs the team commenced operation.

The area was checker as per the original plan presented by Mr. Nore. No type of explosive ordnance was discovered. The operation was completed at approximately 1715 hrs.

On the morning of 18 Sep 91 Dr. L. Chan and Mr. F.

18 September 1991

Javorka were briefed on the results of the sweep.

It is my opinion that we (EODT) responded in a rapid, professional manor and met the needs of ACE, IT and Middlesex College. The Crew conducted the operation in a rapid and skilled manor that met the very highest standards.

Prepared by:



THOS A. MCLAREN

Senior Site Supervisor

APP 1 ACRE AREA



1. PERFORMED SURFACE SWEEP - NOTHING FOUND
2. MAGGED AREA AROUND WHERE GRENADE WAS FOUND (15' RADIUS)
NOTHING-ORDNANCE-RELATED-FOUND
3. MAGGED APP 24' OF EASTERN EDGE ALONG (270') QUICKDRY,
44 HITS - DUG 25% OF THEM - ROCKS, WIRE, PIPE - NO
ORDNANCE RELATED ITEMS RECOVERED.
4. MAGGED APP 300 SQ FT WITHIN THE AREA, APP 105 HITS,
DUG THEM ALL, ROCKS, PIPE, ETC. NO ORDNANCE RELATED
SCRAP FOUND.

SEP 16, 1991

MEMORANDUM FOR RECORD : EOOT RESPONSE TO MIDDLESEX
COMMUNITY COLLEGE, EDISON NEW JERSEY ON 14 SEP
1991.

PERSONNEL DISPATCHED : ED PINSON AND SAM NEWBERRY.

ORDNANCE RECOVERED : 1 EA., GRENADE, HAND, FRAGMENTATI
MK II. UNFUSED, WOODEN PLUG,
EMPTY.

SUMMARY : TEAM RESPONDED PER REQUEST OF DOUG
LAMONTHE, EOOT. TEAM DEPARTED MOTEL AT 1220 HRS
AND ARRIVED SITE AT 1245 HRS. SCENERIO AND
CIRCUMSTANCES AT SITE AS DESCRIBED IN ATTACHED
OPERATIONS REPORT FROM CAMPUS POLICE. ITEM POSITIVE
I.D. AND DETERMINED SAFE TO HANDLE AND TRANSPORT.
DEPARTED SITE AT 1300 AFTER SEARCH OF IMMEDIATE
AREA FOR ADDITIONAL ITEMS. ITEM TAKEN TO MAG
STORAGE AREA IN SITE #16. WOODEN PLUG, REMOVED
AND ITEM FOUND TO BE EMPTY, ITEM SECURED IN
MAGAZINE AND TEAM DEPARTED SITE #16 AT
1350. ARRIVED MOTEL AT 1415.

AFTER ACTION : CALLED DOUG LAMONTHE TO REPORT ACTIONS TAKEN AND
ARRANGED MEETING BETWEEN CAMPUS POLICE, EDISON
POLICE AND LTC POIRIER, COE, FOR 0900 HRS

17 SEP 91 TO DISCUSS PROCEDURES AND PROPER
NOTIFICATION FOR EMERGENCY RESPONSE.

1 ATTACHMENT AS STATED.

Ed Pinson

ED PINSON

ECOT TEAM LEADER

OPERATIONS REPORT

DATE: SEPTEMBER 14, 1991

TIME OF INCIDENT: 1044 HOURS

LOCATION: WOODED AREA ON RIGHTSIDE OF WEST ROAD
BETWEEN GYM AND TENNIS COURTS.

INCIDENT: LIVE HAND-GRENADE
FOUND IN TREE STUMP.

ON THE ABOVE DATE AND TIME THIS OFFICER WAS DISPATCHED TO THE TENNIS COURTS AREA OFF WEST ROAD TO MEET A MAN IN REFERENCE TO A LIVE HAND-GRENADE HE HAD FOUND. AT 1045 HOURS THIS OFFICER ARRIVED AT THE LOCATION AND MET ^{US FOIA EX (b)(6)} AN EMPLOYEE OF SILAGY LANDSCAPING WHO LIVES AT ^{US FOIA EX (b)(6)} EDISON, NJ ^{US FOIA EX (b)(6)} IN REFERENCE TO THE ABOVE MATTER. MR. ^{US FOIA EX (b)(6)} DIRECTED THIS OFFICER TO THE WOODED AREA ON THE RIGHT SIDE OF WEST ROAD. MR. ^{US FOIA EX (b)(6)} STATED THAT HE HAD WALKED INTO THE WOODS APPROXIMATELY 30 FEET FROM THE GRASS LINE HALF WAY BETWEEN THE TENNIS COURTS AND THE CURB OF THE STREET, WHILE LOOKING DOWN HE NOTICED WHAT APPEARED TO BE A GRENADE. MR. ^{US FOIA EX (b)(6)} CALLED OVER HIS FELLOW WORKER AND BOTH MEN EXAMINED THE ITEM AND ONE EVEN KICKED IT ABOUT A FOOT FROM THE TREE STUMP IN WHICH IT WAS FOUND. THE TWO MEN NOTIFIED THIS DEPARTMENT.

AT THIS POINT THIS OFFICER AFTER LISTENING TO MR. ^{US FOIA EX (b)(6)} CHECKED THE AREA AND FOUND WHAT APPEARED TO BE A HAND-GRENADE, THIS OFFICER THEN REQUESTED SGT. ELMYER FROM EDISON POLICE AT 1055 HOURS FOR ASSISTANCE. SGT. ELMYER ARRIVED AT 1112 HOURS AND ALSO EXAMINED THE AREA AND THE GRENADE.

SGT. ELMYER LEFT THE SCENE AND RESPONDED TO COLLEGE POLICE HEADQUARTERS TO TRY AND NOTIFY THE PERSONNEL WHO HAVE BEEN DIGGING UP THE MUNITIONS AT THE NORTH HALL AREA. THAT COMPANY IS E.O.D.T.. HOWEVER BEFORE DOING THAT SGT. ELMYER FIRST HAD TO CALL THE (I.T.) COMPANY FOR THEIR PHONE NUMBER AS WELL AS AUTHORIZATION TO HAVE THEM COME OUT.

AT 1132 THIS OFFICER REQUESTED OFFICER DIAKUNCZAK TO COME IN EARLY, ALSO FOR ASSISTANCE.

AT 1154 HOURS SGT. ELMYER MADE CONTACT WITH THE (I.T.) COMPANY REPRESENTATIVE WHO STATED THEY WOULD GET BACK TO HIM.

AT 1208 HOURS (I.T.) DID GET BACK AND E.O.D.T. WAS NOTIFIED AND STATED THEY WOULD BE OUT IN ABOUT A HALF HOUR. THEY ADVISED SGT. ELMYER TO SEAL OFF THE AREA WHICH WAS DONE PRIOR TO THEIR ARRIVAL.

AT 1246 HOURS ED PINSON OF E.O.D.T ARRIVED ON THE SCENE AFTER EXAMINING THE ITEM HE DETERMINED IT WAS A WORLD WAR II MK-II TYPE GRENADE. MR. PINSON ALSO STATED THAT IT DIDNOT HAVE A FUSE BUT APPEARED TO HAVE A SEALER PLUG WHICH MEANT IT COULD HAVE BEEN FILLED WITH ~~BLACK POWDER~~ BUT WAS NOT SURE AND FURTHER TESTING WOULD BE NEEDED TO PROVE THAT. *explosive*

AT 1259 HOURS MR. PINSON LEFT THE AREA WITH THE GRENADE. THE AREA WAS TAPED OFF WITH POLICE LINE TAPE AND ALL OFFICERS CLEARED.

(615) 483-0007

FAX (615) 481-0653

EOD Technology, Inc.

UXO & Explosive Related
Services, Investigations, Remedial Actions

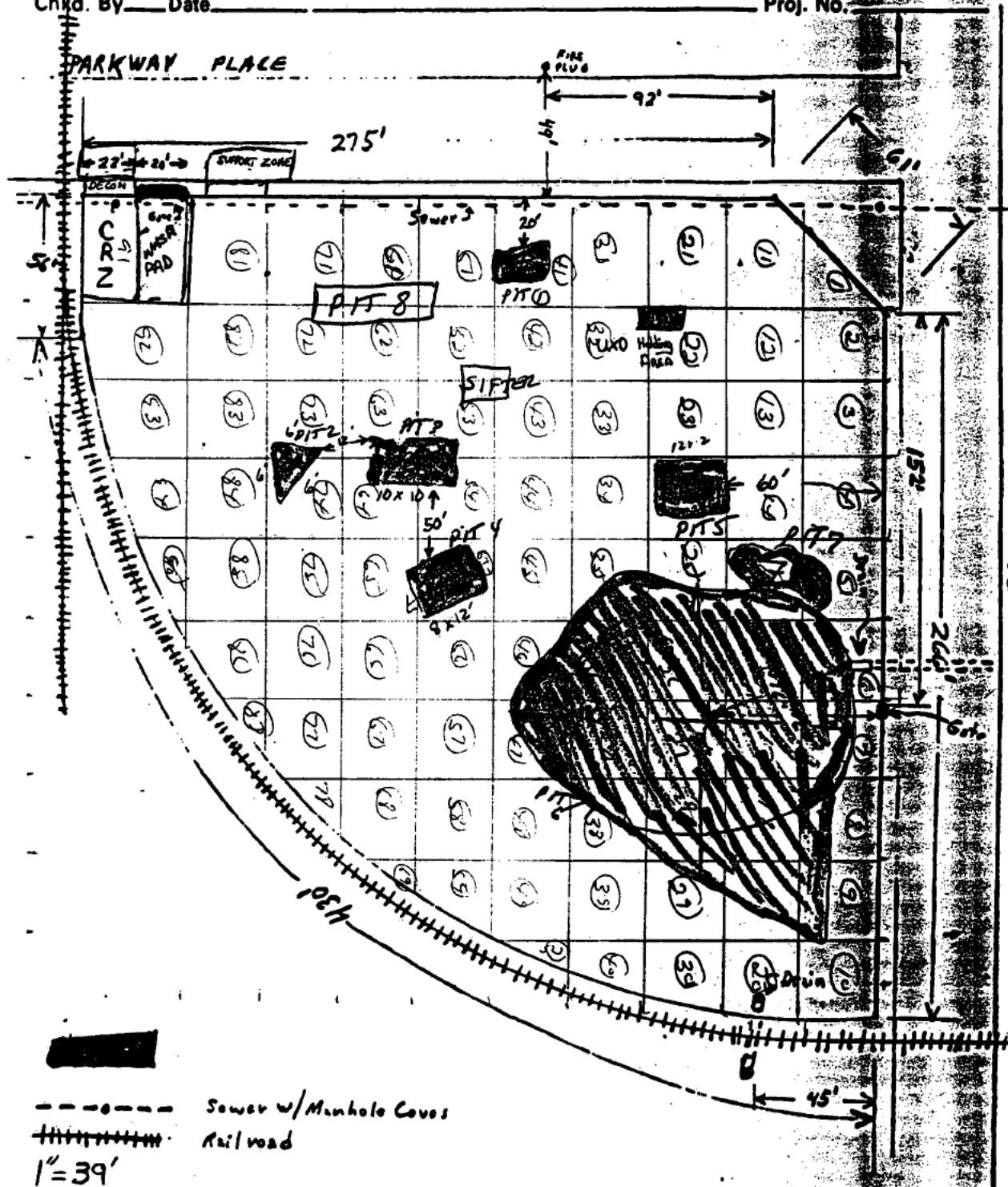
ED PINSON

111 Robertsville Road
Oak Ridge, TN 37830

Team Ldr./ Safety Supervisor
Master EOD Technician

Richard Chartier #117
PTL. RICHARD CHARTIER #117

ATTACHMENT 11



SECRETARYS
BOOKEND OUT

2

2.

2.

8

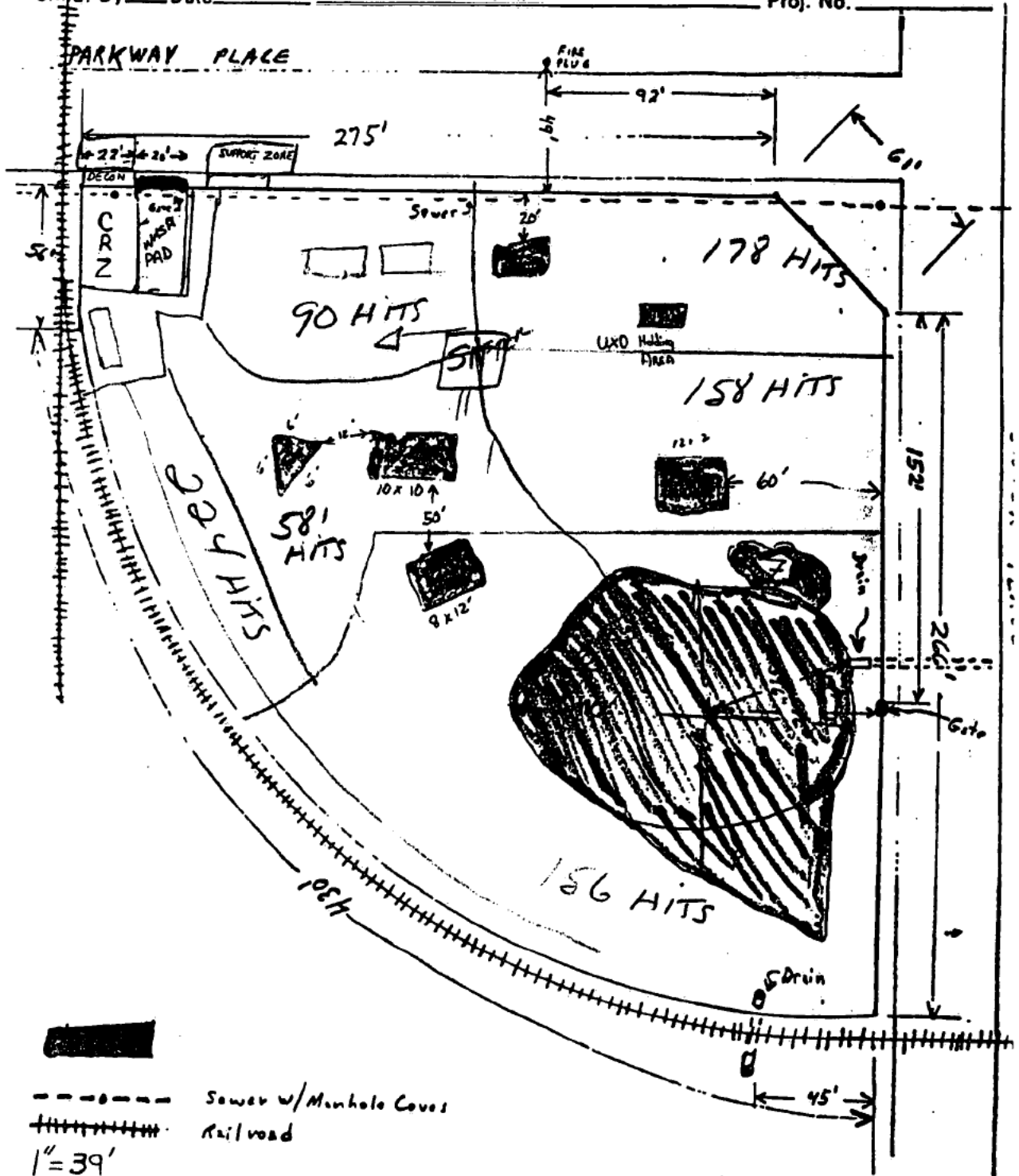
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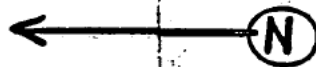
By _____ Date _____ Subject AREA 4 Sheet No. _____ of _____
 Chld. By _____ Date _____ Proj. No. _____



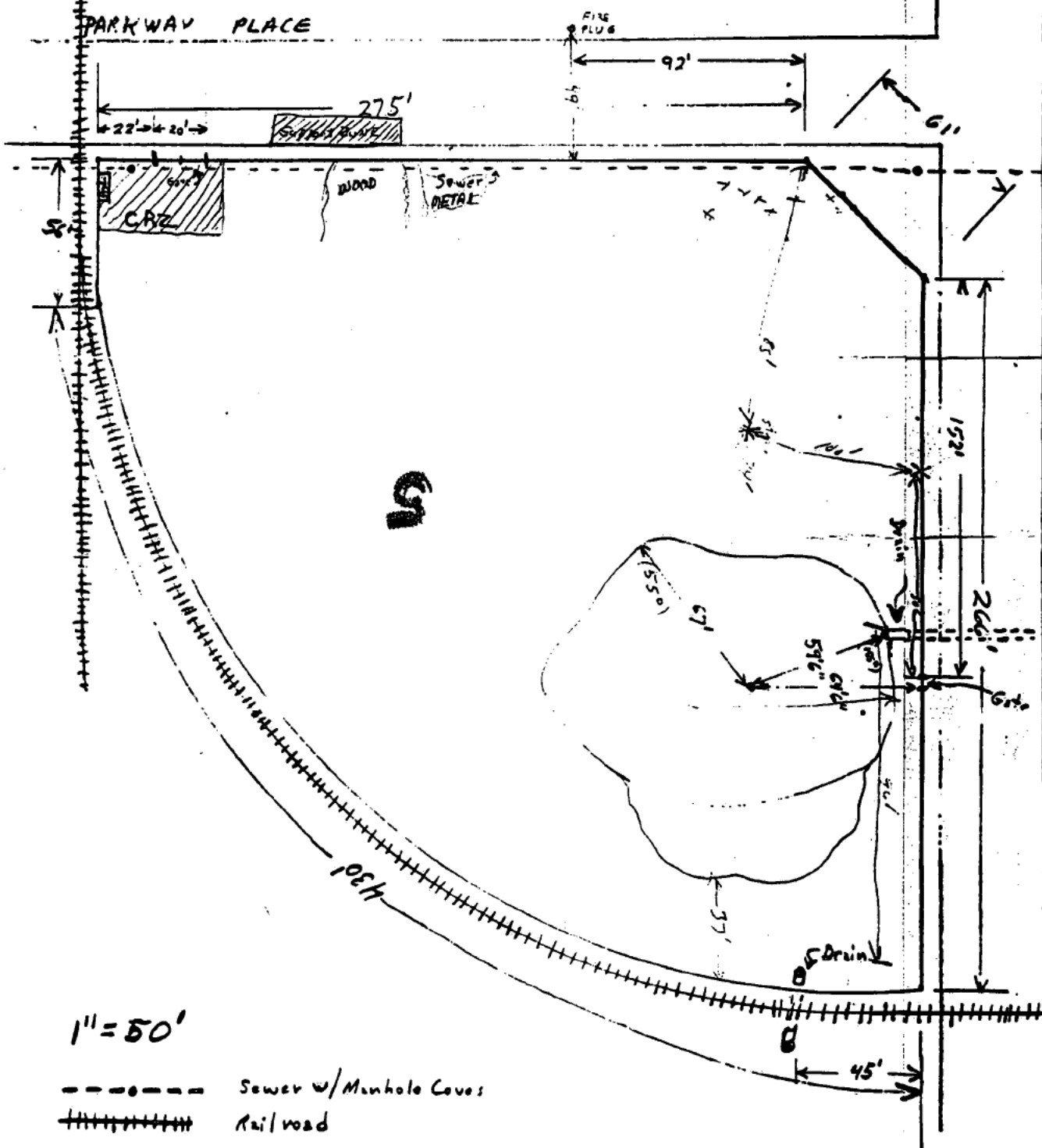
1387 TOTAL HITS
 INCLUDING:
 NAIL BEDS
 RR METAL PILES
 ETC



INTERNATIONAL
TECHNOLOGY
CORPORATION



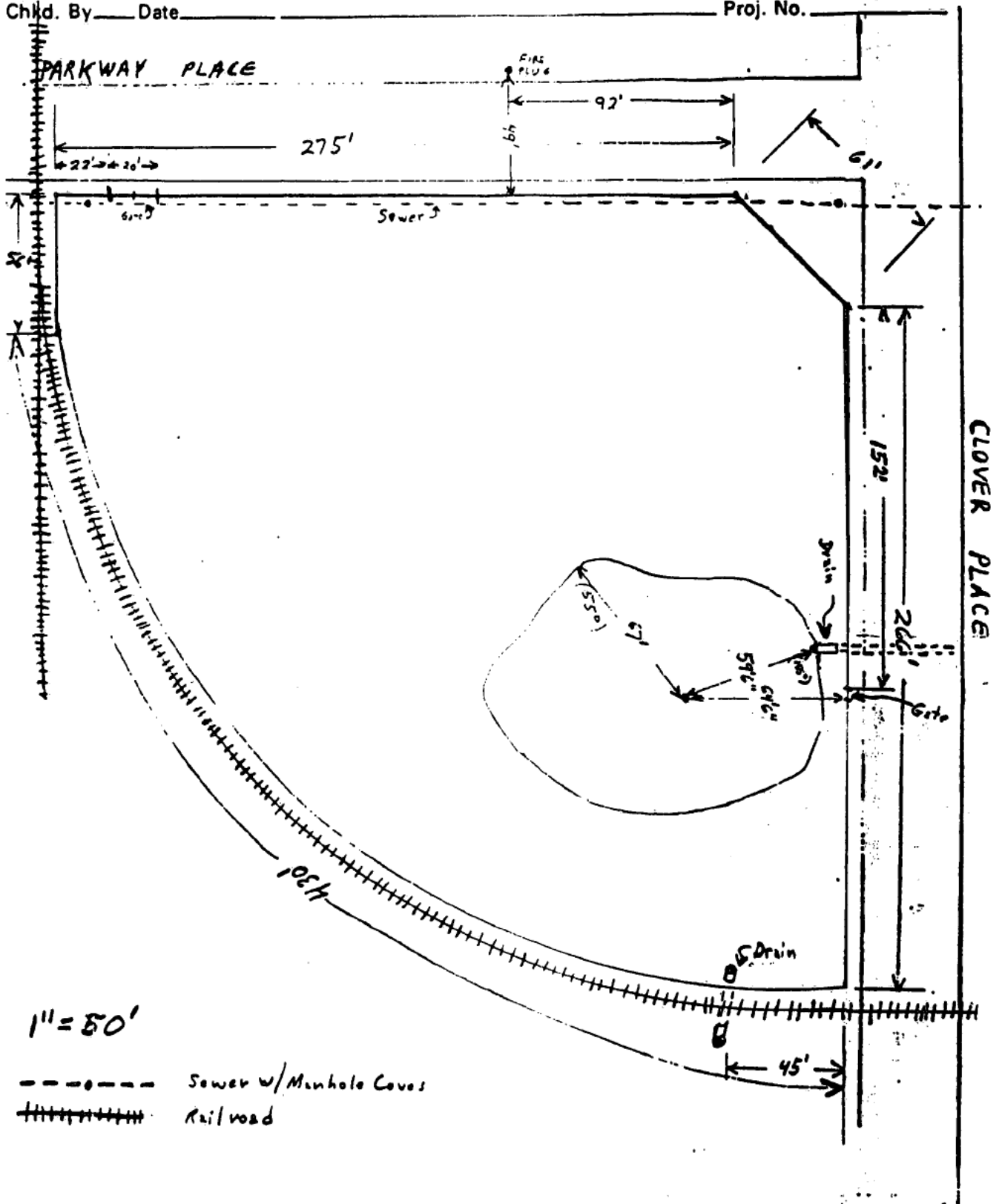
By _____ Date _____ Subject AREA 4 Sheet No. _____ of _____
Chd. By _____ Date _____ Proj. No. _____





INTERNATIONAL
TECHNOLOGY
CORPORATION

By _____ Date _____ Subject AREA 4 Sheet No. _____ of _____
Chkd. By _____ Date _____ Proj. No. _____



ATTACHMENT 12

**EOD TECHNOLOGY, INC.
ORDNANCE RECOVERY LOG FOR SITE 4**

**BAG
NUMBER**

**ORDNANCE
RECOVERED**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

1311-A001

WWI AERIAL BOMB

PIT 4
SECTION 55

TO DEMO/STORAGE
NOVEMBER 6, 1991

1318-A001

75MM EMPTY CASE

PIT 6

TO DEMO/STORAGE
NOV. 14, 1991

1322-A001

ARTY FUZE POW TRAIN TIME

SECTION 9
PIT 2

TO DEMO/STORAGE
NOV. 18, 1991

1344-A001

155MM CASING/H.C. RESIDUE

SECTION
8L

TO DEMO/STORAGE
12-10-91 JAL

1345-A001

75MM HE W/O FUZE

SECTION
94

TO DEMO/STORAGE
12-11-91 JAL

1345-A002

4 GA PROJECTILE A/B

SECTION
94

S S

1346-A001

1 GA PROJECTILE A/B

SECTION
93

TO DEMO/STORAGE
12-12-91 JAL

1351-A001

9.2" HOWITZER NO FUZE
H.C. RESIDUE

SECTION
8

TO DEMO
12-17-91 JAL

1352-A001

75MM HE W/O FUZE

SECTION
3C

TO DEMO
12-18-91 JAL

2009-A001

1 GA PROJ A/B

SECTION
37

TO DEMO
1-9-92 JAL

2015-A001

75MM HE W/O FUZE
REMOVED

SECTION
47

TO DEMO/STORAGE
1-15-92 JAL

A002

A003

S S S S

S

S S

2049-A001

FUZE, COMPLETE, PD

SECTION 37

TO DEMO/STORAGE
2-19-92 JAL

2051-A001

75MM HE W/O FUZE, STAMPS SECTION 46

TO DEMO/STORAGE
2-20-92 JAL

2

3

4

5

6

7

8

9

10

11

12

13

14

75MM HE W/O FUZE STAMPS SECTION 46

3 GA 37MM BOOSTER

1 GA FUZE, PD

"

2066-A001	1 EA PROJ A/BOOSTER	SECTION 25 PIT 6	3-6-92 Kollip to Remo/Store
2070-A001	1 EA PROJ A/BOOSTER	SECTION 14	3-10-92 Kollip to Remo/Store
2077-A001	1 EA 75 mm HE	SECTION 66	3-11-92 Kollip to Remo/Store
02	1 EA 75 mm HE		
03	1 EA PROJ A/BOOSTER		
04	1 EA PROJ A/BOOSTER		

ATTACHMENT 13

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
1312-E001	5.5 LBS	1312-S001	PITS 1 THRU 5	TO DEMO/STORAGE 11-7-91 (JCC)
- E002	10. LBS	S S	PIT 6	S S
- E003	9. LBS	S S	PIT 6	S S
1317-E004	5. LBS	1317-S002	PIT 6	TO DEMO/STORAGE 11-12-91 (JCC)
- E005	6. LBS	1317-S002	SU CORNER PIT 6	S S
L 1318-E006	5. LBS	L 1318-S003	S	TO DEMO/STORAGE 11-13-91
J E007	5. LBS	L S S	{	S S
E008	6. LBS	L S S	{	S S
1318-E001	6.5 LBS	1318-S001	SECTION 9 PIT 6	TO DEMO/STORAGE 11-14-91
1318-E002	5.0 LBS	S S	S	S S
1319-E001	5.0 LBS	1319-S001	S	TO DEMO/STORAGE 11-15-91
J E002	5.0 S	S S S	S	S S S
E003	5.0 S	S S S	S	S S S
E004	3.5 S	S S S	S	S S S
1322-E001	10. LBS	1322-S001	SECTION 9 PIT 6	TO DEMO/STORAGE 11-18-91
- E002	10. S	S S	S	S
- E003	10. S	S S	S	S
- E004	10. S	S S	S	S
- E005	10. S	S S	S	S
- E006	10. S	1322-S002	S	S
- E007	10. S	S S	S	S
- E008	10. S	S S	S	S
1322-E008	11. S	S S	S	S
1323-E001	10. LBS	1323-S001	PIT 6	TO DEMO/STORAGE 11-19-91
- E002	10. S	S S	S	S
- E003	10. S	S S	S	S
- E004	10. S	S S	S	S
- E005	10. S	S S	S	S

222.50 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
1323-E006	10. LBS	1323-5002	PIT 6	TO DEMO/STORAGE 11-19-91
§ - E007	10. LBS	§	§	§
§ - E008	10. LBS	§	§	§
§ - E009	7. LBS	§	§	§
1324-E001	10. LBS	1324-5001	PIT 6	TO DEMO/STORAGE 11-20-91
§ E002	10	§	§	§
§ E003	10	§	§	§
§ E004	10	§	§	§
§ E005	10	§	§	§
§ E006	10	1324-5002	§	§
§ E007	10	§	§	§
§ E008	10	§	§	§
§ E009	10	§	§	§
§ E010	10 LBS	§	§	§
1325-E001	10 LBS	1325-5001	PIT 6	TO DEMO/STORAGE 11-21-91
§ E002	10	§	§	§
§ E003	10	§	§	§
§ E004	10	§	§	§
§ E005	10	§	§	§
1325-E006	10 LBS	1325-5002	PIT 6	TO DEMO/STORAGE 11-21-91
§ - E007	13	§	§	§
§ - E008	14	§	§	§
1325-E009	31 LBS	1325-5003	PIT 6	TO DEMO/STORAGE 11-21-91
§ E010	21	§	§	§
1326-E001	10 LBS	1326-5001	PIT 6	TO DEMO/STORAGE 11-22-91
§ E002	§	§	§	§
§ E003	§	§	§	§
§ E004	§	§	§	§
§ E005	10 LBS	§	§	§

SUB

326 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
1326 - E006	10 LBS	1326 - 5002	PIT 6	TO DEMO/STORAGE 11-22-91
S E007	S S	S S	S S	S S
E008	S S	S S	S S	S S
E009	S S	S S	S S	S S
E010	10 LBS	1326 - 5002		
1329 - E001	S S	1329 - 5001	PIT 1	TO DEMO/STORAGE 11-25-91 JOC
E002	S S	S S	S S	S S
E003	S S	S S	S S	S S
E004	S S	S S	S S	S S
E005	10	S S	S S	S S
E006	11 LBS	1329 - 5002	S S	S S
E007	10	S S	S S	S S
E008	10	S S	S S	S S
E009	17	S S	S S	S S
1329 - E010	14	S S	S S	S S
1330 - E001	10 LBS	1330 - 5001	PIT 6	11-25-91 JOC TO DEMO/STORAGE 11-26-91 JOC
E002	S S	S S	S S	S S
E003	S S	S S	S S	S S
E004	S S	S S	S S	S S
E005	S S	1330 - 5001	S S	S S
E006	S S	1330 - 5002	S S	S S
E007	S S	S S	S S	S S
E008	S S	S S	S S	S S
E009	S S	S S	S S	S S
E010	S S	1330 - 5002	S S	S S
E011	S S	1330 - 5003	S S	S S
E012	S S	S S	S S	S S
E013	S S	S S	S S	S S
E014	S S	S S	S S	S S
1330 - E015	10 LBS	1330 - 5003		
DIR -	210 LBS			

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
1331-E001	10 LBS	1331-S001	PIT 6	TO DEMO/STORAGE 11-27-91 JCL
S E002				
S E003				
E004				
1331-E005		1331-S001		
1331-E006		1331-S002		
S E007				
S E008				
S E009				
1331-E010	10 LBS	1331-S002	PIT 6	11-27-91 JCL
1337-E001	13 LBS	1337-S001		TO DEMO/STORAGE 12-3-91 JCL
S E002	10			
S E003	12			
S E004	22			
1337-E005	12 LBS	1337-S001		12-3-91 JCL
1338-E001	10 LBS	1338-S001	PIT 6	TO DEMO/STORAGE 12-4-91 JCL
E002				
E003				
E004				
E005		1338-S001		
E006		1338-S002		
E007				
E008				
E009				
1338 E010	10 LBS	1338-S002	PIT 6	12-4-91 JCL
1339-E001	10 LBS	1339-S001		TO DEMO/STORAGE 12-5-91 JCL
S E002	10			
S E003	10			
SUB	299 LBS			

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG
NUMBER

EXPLOSIVE
WEIGHT

SERIALIZED
PAIL #

EXCAVATED
AT:

DISPOSITION
AND DATE

1340-E001	10 LBS	1340-S001	PIT 6	TO DEMO/STORAGE 12-6-91 JAL
S E002	10 LBS	S S	S	S S
1343-E001	f	1343-S001	PIT 6	TO DEMO/STORAGE 12-9-91 JAL
E002	f		f	f
E003	f		f	f
E004	f		f	f
E005	f		f	f
E006	f	1343-S002	PIT 6	f
E007	10 LBS	S S	S	S
E008	7 LBS	S S	S	S
1344-E001	10 LBS	1344-S001	PIT 6	TO DEMO/STORAGE 12-10-91 JAL
E002	f	f	f	f
E003	f	f	f	f
E004	f	f	f	f
E005	f	1344-S001	f	f
E006	f	1344-S002	f	f
E007	f	S S	f	f
E008	f	S S	f	f
E009	10 LBS	1344-S002	f	f
1345-E001	10 LBS	1345-S001	PIT 6	TO DEMO/STORAGE 12-11-91 JAL
E002	f	f	f	f
E003	f	f	f	f
E004	f	f	f	f
E005	f	S001	f	f
E006	f	S002	f	f
E007	10 LBS	S002	f	f
1346-E001	10 LBS	1346-S001	f	TO DEMO/STORAGE 12-12-91 JAL
SUB-	267 LBS			

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
1352 - E201	70 LBS	1352 - 5001	PIT 6	TO DEMO/STORAGE 12-18-91 JCL
f E202	f	f	f	f
f E203	f	f	f	f
f E204	f	f	f	f
f E205	f	f 5001	f	f
1352 - E206	f	f 5002	f	f
f E207	f	f	f	f
f E208	10 LBS	f 5002	f	f
1353 - E001	10	1353 - 5001	PIT 6	TO DEMO/STORAGE 12-19-91 JCL
f 002	f	f	f	f
f 003	10	f	f	f
f 004	8 LBS	f	f	f
AS OF 5/18/92 = 1544.5 LBS			RETRIEVED JCL	
2009 - E201	10.0 LBS	2009 - 5001	PIT 6	TO DEMO/STORAGE 1-9-92 JCL
f 2	f	f	f	f
f 3	f	f	f	f
f 4	f	f	f	f
f 5	f	2009 - 5001	f	f
f 6	f	2009 - 5002	f	f
f 7	f	f	f	f
f 8	f	f	f	f
f 9	*10.0 LBS	f	f	f
E010	12.5 LBS	2009 - 5002	PIT 6	f
2010 - E201	50 LBS	2010 - 5001	f	TO DEMO/STORAGE 1-10-92 JCL
f E202	40 LBS	f - 5002	f	f
f E203	46.5 LBS	f - 5003	f	f
f E204	50. LBS	f - 5004	f	f

SUB

289.00

> 407 GROSS TOTAL FOR DEMO

DISPOSITION <u>AND</u> <u>DATE</u>	
1	
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302 (B) Feb. 2014

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2015-E001	10 LBS	2015-5001	PIT 6	1-15-92 for to demo/storage
2				
3				
4				
5		5001		
6		5002		
7				
8				
9				
010		5002		
11		5003		
12				
13				
14				
15		5003		
16		5004		
17				
18				
19				
20		5004		
21		5005		
22				
23				
24		5005		
25		5006		
26				
27				
28		5006		
29		5007		
2015-E030	10 LBS	2015-5007		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2015-6031

101 LBS

2015-5007

PIT 6

1-15-92 Sec
to Demo/Storage

32

101 LBS

007

33

101 LBS

5008

34

101 LBS

35

101 LBS

36

101 LBS

5008

37

101 LBS

5004

38

101 LBS

5009

39

101 LBS

5010

40

101 LBS

5011

10 41

101 LBS

2015-5012

SUB-TOTAL

467 LBS

EXCAVATED ON 1-15-92 Sec

2017-6001

101 LBS

2017-5001

PIT 6

1-17-92 Sec
to Demo/Storage

02

101 LBS

03

101 LBS

04

101 LBS

05

101 LBS

5001

06

101 LBS

5002

07

101 LBS

08

101 LBS

5002

09

101 LBS

5003

2021-6001

101 LBS

2021-5001

PIT 6

1-21-92 Sec
to Demo/Storage

02

101 LBS

03

101 LBS

04

101 LBS

05

101 LBS

342 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2021-E001

1.05 LBS

2021-5002

PIT 6

1-21-21 for
TO DEMO/STORAGE

07

1.05

08

1.05

09

1.05

10

1.05

11

1.05

12

1.05 LBS

13

1.05 LBS

14

1.05 LBS

15

1.05

16

1.05

17

1.05

18

1.05

5002

5003

5003

5004

5005

5006

5007

2022-E001

1.05 LBS

2022-5001

PIT 6

1-22-21 for
TO DEMO/STORAGE

02

1.05

03

1.05

04

1.05

05

1.05

06

1.05

07

1.05

08

1.05

09

1.05

010

1.05

11

1.05

12

1.05

13

1.05

14

1.05

15

1.05

5001

5002

5002

5003

5003

322 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2022-0016	10 LBS	2022-5004	PIT 6	1-22-92 see to DEMO/STORAGE.
17				
18				
19				
20		5004		
21		5005		
22				
23				
24				
25	10 LBS	5005		
26	20	5006		
27	20			
28	20	5006		
29	15	5007		
30	20			
E031	40	5007		
2023-0001	20 LBS	2023-5001	PIT 6	1-23-92 see to DEMO/STORAGE.
02				
03		5001		
04		5002		
05				
06		5002		
07		5003		
08				
09	20 LBS	5003		
E010	24 LBS	5004		

439. LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2024-E001	20 LBS	2024-S001	DIT 6	1-24-92 JOL to DEMO/Storage
02		01		
03		02		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
010		04		
2024-011		04		
2027-E001	20 LBS	2027-S001		1-27-92 - JOL to DEMO/Storage
02		01		
03		01		
04		S002		
05		02		
06		02		
07		S003		
08	20 LBS	03		
09	15 LBS	03		
2028-E001	20 LBS	2028-S001	DIT 6	1-28-92 JOL to DEMO/Storage
2		S		
3		S001		
4		S002		
5		S		
6		S002		
7		S003		
8		S		
9				
575 LBS				

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2028-0010	20 LBS	2028-5004	PIT 6	1-28-92 sec to DEMO/STORAGE
S 11	S	S S	S	S
S 12	S	S S	S	S
2029-0001	20 LBS	2029-5001	PIT 6	1-28-92 sec to DEMO/STORAGE
S 02	S	S 5	S	S
S 03	S	S 5001	S	S
S 04	S	S 5002	S	S
S 05	S	S 5	S	S
S 06	S	S 5002	S	S
S 07	S	S 5003	S	S
S 08	S	S 5	S	S
S 09	S	S 5003	S	S
S 10	S	S 5005	S	S
S 11	S	S 5	S	S
S 12	S	S 5005	S	S
2030-0001	20 LBS	2030-5001	PIT 6	1-30-92 sec to DEMO/STORAGE
S 02	S	S 01	S	S
S 03	S	S 01	S	S
S 04	S	S 02	S	S
S 05	S	S 02	S	S
S 06	S	S 02	S	S
S 07	S	S 03	S	S
S 08	S	S 03	S	S
S 09	20 LBS	S 03	S	S
2035-0001	20 LBS	2035-5001	PIT 6	2-4-92 sec to DEMO/STORAGE
S 02	S	S 01	S	S
S 03	S	S 01	S	S
S 04	S	S 02	S	S
S 05	S	S 02	S	S
S 06	20 LBS 600 LBS	S 02	S	S

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG
NUMBER

EXPLOSIVE
WEIGHT

SERIALIZED
PAIL #

EXCAVATED
AT:

DISPOSITION
AND DATE

2035-E007	20 LBS	2035-5003	PIT 6	2-4-92 Scenlog to Demo/Struc.
08		03		
09		03		
10		04		
E011	20 LBS	5004		
2036-E001	20 LBS	2036-5001	PIT 6	2-5-92 Scenlog to Demo/Struc.
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
010		04		
011	20 LBS	04		
012	16 LBS	04		
2037-E001	20 LBS	2037-5001	PIT 6	2-6-92 Scenlog to Demo/Struc.
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
010		04		
11		04		
12		04		
576 LBS				

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2037-6013	20 LBS	2037-5005	PIT 6	2-6-92 JCC/Logg to Demo/Storage
14		05		
15		05		
16		06		
17		06		
18		06		
2038-6001	20 LBS	2038-5001	PIT 6	2-7-92 JCC/Logg to Demo/Storage
02		1		
03		1		
04		2		
05		2		
06		2		
07		3		
08		3		
09		3		
10		4		
11		4		
12		4		
13		5		
14		5		
15		5		
16		6		
17		6		
18	20 LBS	6	PIT 6	
2042-6001	20 LBS	2042-5001	PIT 6	2-11-92 JCC/Logg to Demo/Storage
02		01		
03		01		
04	20 LBS	02		

SUB 480 LBS AS 2037-6013-

480 + 80 LBS

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG
NUMBER

EXPLOSIVE
WEIGHT

SERIALIZED
PAIL #

EXCAVATED
AT:

DISPOSITION
AND DATE

2042-6005	20 LBS	2042-5002	Pct 6	2-12-92 JCLC to Demo/Storage
06		02		
07		03		
08		03		
09	20 LBS	03		
2043-6001	20 LBS	2043-5001	Pct 6	2-12-92 JCLC to Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12	20 LBS	04		
2044-6001	20 LBS	2044-5001	Pct 6	2-13-92 JCLC to Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12	20 LBS	04		
580 LBS				

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG
NUMBER

EXPLOSIVE
WEIGHT

SERIALIZED
PAIL #

EXCAVATED
AT:

DISPOSITION
AND DATE

2045-E001	20 LBS	2045-S001	PIT 6	2-14-92 <i>Colleg</i> <i>to Demo/Storage</i>
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
15		05		
16		06		
17		06		
18		06		
2049-E001	20 LBS	2049-S001	PIT 6	2-18-92 <i>Colleg</i> <i>to Demo/Storage</i>
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
	600 LBS			

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2050-EO01	20 LBS	2050-5001	Pit C	2-19-92 Contingency to Area Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
2050-EO15	20 LBS	05		
2051-EO01	20 LBS	2051-5001	Pit C	2-20-92 Contingency to Area Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12	20 LBS	04		
13				
14				
15				
16				
17				
18				
19				
20				

540 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2052-EO01	20 LBS	2052-S001	Pit 6	2-21-92 J. G. G. / J. G. G.
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
2052-EO08	20 LBS	03		
2055-EO01	20 LBS	2055-S001	Pit 6	2-24-92 J. G. G. / J. G. G.
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
2055-EO12	20 LBS	04		
2056-EO01	20 LBS	2056-S001	Pit 6	2-25-92 J. G. G. / J. G. G.
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		

810 (B)

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2056- E010	20 LBS	2056- S004	PIT 6	2-25-92 to Demo/Storage
11		04		
12		04		
2057- E001	20 LBS	2057- S001	PIT 6	2-26-92 of Contingency to Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
2058- E001	20 LBS	2058- S001	PIT 6	2-27-92 of Contingency to Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12	20 LBS	04		

540 LBS

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2058-FO13	20 LBS	2058-S005	PIT 6	2-27-92 Holograph to Demo/Storage
14		05		
15		05		
16		06		
17		06		
18	20 LBS	06		
19	826 LBS	07		
20	96 LBS	08		
2063-FO01	20 LBS	2063-S001	PIT 6	TO Demo/Storage 3-3-92 Holograph
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
15		05		
16		06		
17		06		
2063-FO18	20 LBS	06		

$$480 + 826 + 96 = 1402 \text{ LBS}$$

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

BAG NUMBER	EXPLOSIVE WEIGHT	SERIALIZED PAIL #	EXCAVATED AT:	DISPOSITION AND DATE
2064-E001	20 LBS	2064-5001	PIT 6	2-7-92 H. L. Lyle to 6mm/5mm
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
15		05		
16		06		
17		06		
2064-E018	20 LBS	2064-E06		
2065-E001	20 LBS	2065-5001	PIT 6	3-5-92 H. L. Lyle to 6mm/5mm
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
2065-E012	600 LBS	04		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2065-E013	20 LBS	2065-5005	PIT 6	3-5-92 Hurler to Camp/Range
14		05		
15		05		
16		06		
17		06		
2065-E018	20 LBS	06		
2066-E001	20 LBS	2066-5001	PIT 6	3-6-92 Hurler to Camp/Range
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
15		05		
16		06		
17		06		
2066-E018	20 LBS	2066-5006		
19		07		
20		07		
21		07		
22		08		
23		08		
24		08		
600 LBS				

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2070-ED001	20 LBS	2070-5001	PIT 6	8-13-92 <i>Handwritten</i> To Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
07		03		
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
2070-ED015	20 LBS	2070-5005		
2071-ED001	20 LBS	2071-5001	PIT 6	3-17-92 <i>Handwritten</i> To Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		
2071-ED007	20 LBS	2071-5003		
2077-ED001	18 LBS	2077-5001	PIT 6	3-17-92 <i>Handwritten</i> To Demo/Storage
2078-ED001	20 LBS	2078-5001	PIT 6	3-17-92 <i>Handwritten</i> To Demo/Storage
02		01		
03		01		
04		02		
05		02		
06		02		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL #</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2078-6207	20 LBS	2078-5003	PIT B	3-14-92 J. C. [unclear] to Demo/Storage
08		03		
09		03		
10		04		
11		04		
12		04		
13		05		
14		05		
15		05		
16		06		
17		06		
2078-6018	20 LBS	2078-5006		
2079-6201	20 LBS	2079-5001	PIT 8	3-14-92 J. C. [unclear] to Demo/Storage
02	20			
03	31			
	<u>12,180.5</u>	<u>LBS TOTAL THE REGION</u>		
2080-6201	90 LBS	2080-5001	PIT 8	3-14-92 J. C. [unclear] to Demo/Storage
2080-6202	90 LBS	2080-5002		
	<u>12,360.5</u>	<u>LBS TOTAL THE REGION</u>		

ATTACHMENT 14

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
1312-S001	5.5 LBS	1312-E001	PITS 1-THEU 5	TO DEMO AREA 11-7-91 (cc)
S S	10.0 LBS	1312-E002	PIT 6	S
	9.0 LBS	1312-E003	PIT 6	S
1317-S002	5.0 LBS	1317-E004	PIT 6	TO DEMO/STORAGE 11-12-91 (cc)
S S	6.0 LBS	1317-E005	34 CORNER PIT 6	S S
L1318-S003	5.0 LBS	1318-E006	PIT 6	TO DEMO/STORAGE 11-13-91
	5.0 LBS	1318-E007	S	S S
	6.0 LBS	1318-E008	S	S S
1318-S001	6.5 LBS	L1318-E001	SECTION 9 PIT 6	TO DEMO/STORAGE 11-14-91
	5.0 LBS	L1318-E002	S	S S
1319-S001	5.0 LBS	1319-E001	S	TO DEMO/STORAGE 11-15-91
S S	5.0	S E002	S	S S
	5.0	S E003	S	S S
	3.5	S E004	S	S S
1322-S001	10. LBS	1322-E001	SECTION 19 PIT 6	TO DEMO/STORAGE 11-18-91
S S	10.	E002	S	S
	10.	E003	S	S
	10.	E004	S	S
	10.	E005	S	S
1322-S002	10.	E006	S	S
S S	10.	E007	S	S
	10.	E008	S	S
	11. LBS	1322 E009	S	S
1323-S001	10. LBS	1323-E001	PIT 6	TO DEMO/STORAGE 11-19-91
S S	10.	S - E002	S	S
	10.	S - E003	S	S
	10.	S - E004	S	S
	10.	S - E005	S	S

222.5

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
1323-5002	10. LBS	1323- E006	PIT 6	TO DEMO/STORAGE 11-19-91
§	10. LBS	§ E007	§	§
§	10. LBS	§ E008	§	§
§	7. LBS	§ E009	§	§
1324-5001	10 LBS	1324- E001	PIT 6	TO DEMO/STORAGE 11-20-91
§	10 LBS	§ - E002	§	§
§	10 LBS	§ - E003	§	§
§	10 LBS	§ - E004	§	§
§	10 LBS	§ - E005	§	§
1324-5002	10 LBS	1324- E006	§	§
§	10 LBS	§ E007	§	§
§	10 LBS	§ E008	§	§
§	10 LBS	§ E009	§	§
§	10 LBS	§ E010	§	§
1325-5001	10 LBS	1325- E001	PIT 6	TO DEMO/STORAGE 11-21-91
§	10 LBS	§ E002	§	§
§	10 LBS	§ E003	§	§
§	10 LBS	§ E004	§	§
§	10 LBS	§ E005	§	§
1325-5002	10 LBS	1325- E006	§	§
§	13 LBS	§ E007	§	§
§	14 LBS	§ E008	§	§
1325-5003	31 LBS	1325- E009	§	§
§	21 LBS	§ E010	§	§
1326-5001	10 LBS	1326- E001	PIT 6	TO DEMO/STORAGE 11-22-91 for
§	10 §	§ E002	§	§
§	10 §	§ E003	§	§
§	10 §	§ E004	§	§
1326-5001	10 LBS	1326 E005	PIT 6	§

326 LBS
2

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
1326-5002	10 LBS	1326-E006	PIT 6	TO DEMO/STORAGE 11-22-91 JAL
S	10 LBS	S E007	S	S
S	10 LBS	S E008	S	S
S	10 LBS	S E009	S	S
1326-5002	10 LBS	E010	PIT 6	
1329-5001	10 LBS	1329-E001	PIT 6	TO DEMO/STORAGE 11-25-91 JAL
S	10 LBS	S E002	S	S
S	10 LBS	S E003	S	S
S	10 LBS	S E004	S	S
1329-5001	10 LBS	E005	S	S
1329-5002	11 LBS	E006	S	S
S	10 LBS	S E007	S	S
S	10 LBS	S E008	S	S
S	17 LBS	E009	S	S
1329-5002	14 LBS	1329-E010	PIT 6	
1330-5001	10 LBS	1330-E001	S	TO DEMO/STORAGE 11-26-91 JAL
S	10	S E002	S	S
S	10	S E003	S	S
S	10	S E004	S	S
1330-5001	10	1330-E005	S	S
1330-5002	10	1330-E006	S	S
S	10	S E007	S	S
S	10	S E008	S	S
S	10	E009	S	S
1330-5002	10	1330-E010	S	S
1330-5003	10	1330-E011	S	S
S	10	S E012	S	S
S	10	E013	S	S
S	10	E014	S	S
1330-5003	10 LBS	1330-E015	S	11-26-91 JAL
312 LBS				

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

**SERIALIZED
PAIL #**

**EXPLOSIVE
WEIGHT**

**BAG
NUMBER**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

1331-5001	10 LBS	1331-E001	PIT 6	TO DEMO/STORAGE 11-27-91 JCL
S	S	E002	S	S
S	S	E003	S	S
S	S	E004	S	S
1331-5001		1331-E005		
1331-5002		1331-E006		
S	S	E007	S	S
S	S	E008	S	S
S	S	E009	S	S
1331-5002	10 LBS	1331-E010	PIT 6	11-27-91 JCL
1337-5001	13 LBS	1337-E001		TO DEMO/STORAGE 12-5-91 JCL
S	10 LBS	E002	S	S
S	12 LBS	E003	S	S
S	22 LBS	E004	S	S
1337-5001	12 LBS	1337 E005		12-3-91 JCL
1338-5001	10 LBS	1338-E001	PIT 6	TO DEMO/STORAGE 12-4-91 JCL
S	S	E002	S	S
S	S	E003	S	S
S	S	E004	S	S
S	S	E005	S	S
1338-5002		E006		
S	S	E007	S	S
S	S	E008	S	S
S	S	E009	S	S
1338-5002	10 LBS	1338-E010	PIT 6	12-4-91 JCL
1339-5001	10 LBS	1339-E001		TO DEMO/STORAGE 12-5-91 JCL
S	S	E002	S	S
1339-5001	10 LBS	E003	S	S

299 LBS

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
1340-5001	10 LBS	1340-E001	PIT 6	TO DEMO/STORAGE 12-6-91 JCL
S S	10 LBS	S E002	S S	S
1343-5001	10 LBS	1343-E001	PIT 6	TO DEMO/STORAGE 12-9-91 JCL
S S	S S	E002	S S	S S
		E003		
		E004		
1343-5001		E005		
1343-5002		E006		
S S	10	E007		
	7 LBS	E008		
1344-5001	10 LBS	1344-E001	PIT 6	TO DEMO/STORAGE 12-10-91 JCL
S 5002-1	S S	E002	S	S
S 5002-1		E003		
S 5004-1		E004		
S 5006-1		E005		
1344-5002		E006		
S 5002		E007		
S 5002		E008		
S 5002	10 LBS	E009		
1345-5001	10 LBS	1345-E001	PIT 6	TO DEMO/STORAGE 12-11-91 JCL
S S	S S	E002	S	S
		E003		
		E004		
S 5001		E005		
S 5002		E006		
S 5002	10 LBS	E007		
1346-5001	10 LBS	1346-E001	PIT 6	TO DEMO/STORAGE 12-12-91

267 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
1352-5001	10 LBS	1352-E001	PIT 6	TO DEMO/STORAGE 12-18-91 JCL
S	S	E002	S	S
S	S	E003	S	S
S	S	E004	S	S
1352-5001	S	E005	S	S
S 5002	S	E006	S	S
S	S	E007	S	S
S 5002	10 LBS	E008	S	S
1353-5001	S S	1353-E001	S	12-19-91 TO DEMO/STORAGE K
S S	S S	E002	S	S
S S	10 LBS	E003	S	S
S 5001	8 LBS	E004	S	S
2009-5001	10 LBS	2009-E001	PIT 6	1-9-92 JCL TO DEMO/STORAGE
S	S	S 2	S	S
S	S	S 3	S	S
S 5001	S	S 4	S	S
S 5002	S	S 5	S	S
S	S	S 6	S	S
S	S	S 7	S	S
S	S	S 8	S	S
S	10 LBS	S 9	S	S
2009-5002	12.5 LBS	2010	S	S
2010-5001	50 LBS	2010-E001	S	1-10-92 JCL TO DEMO/STORAGE
S 5002	40 LBS	S 002	S	S
S 5003	46.5 LBS	S 003	S	S
S 5004	50 LBS	S 004	S	S

289 LBS + 118 = 407 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2014-5001	10 LBS	2014-E001	PIT 1	1-14-92 sec to DEMO/STORAGE
		E002		
		E003		
		E004		
		E005		
5001		006		
5002		007		
		008		
		009		
5002	10 LBS	010		
5003	22 LBS	011		
	10 LBS	012		
		013		
		014		
5003		015		
5004		016		
		017		
		018		
		019		
5004		020		
5005		021		
		022		
		023		
		024		
5005		025		
5006		026		
		027		
		028		
5006	10 LBS	2014-029	PIT 6	
	302 LBS			

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2015-S001	10 LBS	2015-E001	Pit 6	1-15-92 to to DEMO/STORAGE
		2		
		3		
		4		
S001		5		
S002		E006		
		7		
		8		
		9		
S002		10		
S003		E011		
		12		
		13		
		14		
S003		15		
S004		16		
		17		
		18		
		19		
S004		20		
S005		21		
		22		
		23		
S005		24		
S006		25		
		26		
		27		
S006	10 LBS	2015-E028	Pit 6	
280 LBS				

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2015-5007	10 LBS	2015-E029	PIT C	1-15-92 for to Demo/Storage
S	S	30		
5007		31		
5008		32		
S	S	33		
5008		34		
5004	10 LBS	35		
5009	34 LBS	36		
5010	27 LBS	37		
5011	9 LBS	38		
2015-5012	27 LBS	040		
2017-5001	10 LBS	2015-E041	PIT C	for
S	S	2017-E001		1-17-92 for to Demo/Storage
5001	10 LBS	02		
5002	15 LBS	03		
S	10	04		
5003	37 LBS	05		
		06		
		07		
		08		
		2017-09		
2021-5001	10 LBS	2021-E001	PIT 6	1-21-92 for to Demo/Storage
S	S	02		
		03		
		04		
	10 LBS	05		
	362 LBS			

**EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4**

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2021-5002	10 LBS	2021-ED06	PIT 6	1-21-92 JCC TO DEMO/STORAGE
S	S	07	S	S
S	S	08	S	S
S	S	09	S	S
5002	S	10	S	S
5003	10 LBS	11	S	S
S	11	12	S	S
S	11	13	S	S
5003	12	14	S	S
5004	21	15	S	S
5005	22	16	S	S
5006	26	17	S	S
5007	9	2021-ED18	S	S
2022-5001	10 LBS	2022-ED01	PIT 6	1-22-92 JCC TO DEMO/STORAGE
S	S	02	S	S
S	S	03	S	S
S	S	04	S	S
5001	S	05	S	S
5002	S	06	S	S
S	S	07	S	S
S	S	08	S	S
S	S	09	S	S
5002	S	10	S	S
5003	S	11	S	S
S	S	12	S	S
S	S	13	S	S
S	S	14	S	S
5003	S	15	S	S
322 LBS				

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2022-5004	10 LBS	2022-E016	PIT 6	1-22-92 ycc to demo storage
S	S	17	S	S
5004	S	18	S	S
5005	S	19	S	S
S	S	20	S	S
S	S	21	S	S
S	S	22	S	S
S	S	23	S	S
S	S	24	S	S
5005	10 LBS	25	S	S
5006	20	26	S	S
S	20	27	S	S
5006	20	28	S	S
5007	15	29	S	S
S	20	30	S	S
5007	40	31	S	S
2023-5001	20 LBS	2023-E001	PIT 6	1-22-92 ycc to demo storage
S	S	02	S	S
5001	S	03	S	S
5002	S	04	S	S
S	S	05	S	S
5002	S	06	S	S
5003	S	07	S	S
S	S	08	S	S
5003	20 LBS	09	S	S
5004	24 LBS	E010	S	S

439 LBS

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2024-5001	20 LBS	2024-L001	PIT 6	1-24-92 for TO DEMOLITION
S		02		
01		03		
5002		004		
02		05		
02		06		
5003		07		
03		08		
03		09		
5004		10		
04		011		
2027-5001	20 LBS	2027-L001	PIT 6	1-27-92 for TO DEMOLITION
01		02		
01		03		
5002		04		
02		05		
02		06		
5003		07		
03	20 LBS	08		
03	15 LBS	09		
2028-5001	20 LBS	2028-L001	PIT 6	1-28-92 for TO DEMOLITION
S		2		
S		3		
5002		4		
S		5		
2		6		

515 LBS

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2028-S003	20 LBS	2028-E007	PIT 6	1-28-92 JCL TO DEMO/STORAGE
(3	(	( 8	((
(3	(	( 9	((
S004	(	( 10	((
(4	(	( 11	((
S004	(	( 12	((
2029-S001	20 LBS	2029-E001	PIT 6	1-24-92 JCL TO DEMO/STORAGE
(1	(	( 2	((
(1	(	( 3	((
(2	(	( 4	((
(2	(	( 5	((
(2	(	( 6	((
(3	(	( 7	((
(3	(	( 8	((
(3	(	( 9	((
(4	(	( 10	((
(4	(	( 11	((
(4	(	( 12	((
2030-S001	20 LBS	2030-E001	PIT 6	1-30-92 JCL TO DEMO/STORAGE
(01	(	( 02	((
(01	(	( 03	((
(02	(	( 04	((
(02	(	( 05	((
(02	(	( 06	((
(03	(	( 07	((
(03	(	( 08	((
(03	(	( 09	((

540 LB

EOD TECHNOLOGY, INC.
EXPLOSIVE STORAGE LOG FOR SITE 4

SERIALIZED PAIL #	EXPLOSIVE WEIGHT	BAG NUMBER	EXCAVATED AT:	DISPOSITION AND DATE
2035-5001	20 LBS	2035-6001	PIT 6	2-4-92 Technology to Demo/Storage
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		010		
04	20 LBS	011		
2036-5001	20 LBS	2036-6001	PIT 6	2-5-92 Technology to Demo/Storage
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04	20 LBS	11		
04	16 LBS	12		
2037-5001	20 LBS	2037-6001	PIT 6	2-6-92 Technology to Demo/Storage
01		02		
01		03		
02		04		
02		05		
02		06		
576 LBS				

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

<u>PAIC</u> <u>SAG</u> NUMBER	EXPLOSIVE WEIGHT	SERIALIZED <u>PAIC</u> # <u>SAG</u>	EXCAVATED AT:	DISPOSITION AND DATE
2037-5003	20 LBS	2037-E007	PIT 6	2-6-92 security to Dym/Storac
03		08		
03		09		
04		10		
04		11		
04		12		
05		13		
05		14		
05		15		
06		16		
06		17		
06		18		
38-5001	20 LBS	2038-E001	PIT 6	2-7-92 security to Dym/Storac
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		
05		13		
05		14		
05		15		
06		16		
06		17		
06	20 LBS	18		
	600 LBS	2039		

EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4

MIL
BAG
NUMBER

EXPLOSIVE
WEIGHT

SERIALIZED
-PAIL #
BAG

EXCAVATED
AT:

DISPOSITION
AND DATE

2042-5001	20 LBS	2042-E001	PIT 6	2-12-92 <i>to dump/stock</i>
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03	20 LBS	09		
2043-5001	20 LBS	2043-E001	PIT 6	2-12-92 <i>to dump/stock</i>
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04	20 LBS	12		
2044-5001	20 LBS	2044-E001	PIT 6	2-14-92 <i>to dump/stock</i>
01		02		
01		03		
02		04		
02		05		
02	20 LBS	06		

3-9-92 540

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>PAIL -BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL # BAG</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2044-S003	20 LBS	2044-E007	PIT 6	2-18-92 JCB to Area/Storage
f 03	f	f 01	f	f
f 03	f	f 09	f	f
f 04	f	f 10	f	f
f 04	f	f 11	f	f
f 04	20 LBS	f 12	f	f
2045-S001	20 LBS	2045-E001	PIT 6	2-18-92 JCB to Area/Storage
f 01	f	f 02	f	f
f 01	f	f 03	f	f
f 02	f	f 04	f	f
f 02	f	f 05	f	f
f 02	f	f 06	f	f
f 03	f	f 07	f	f
f 03	f	f 08	f	f
f 03	f	f 09	f	f
f 04	f	f 10	f	f
f 04	f	f 11	f	f
f 04	f	f 12	f	f
f 05	f	f 13	f	f
f 05	f	f 14	f	f
f 05	f	f 15	f	f
f 06	f	f 16	f	f
f 06	f	f 17	f	f
f 06	20 LBS	f 18	f	f
2049-S001	20 LBS	2049-E001	PIT 6	2-18-92 JCB to Area/Storage
f 01	f	f 02	f	f
f 01	f	f 03	f	f
f 02	f	f 04	f	f
f 02	f	f 05	f	f
f 02	600 LBS	f 06	f	f

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**PAIR
BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #
BAG**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2049-S003	20 LBS	2049-E007	DT 6	2-11-92 Katelyn to Demol/transfer
f 02	f	f 01	f	f
03		09		
04		10		
04		11		
04	20 LBS	12		
2050-S001	20 LBS	2050-E001	DT 6	2-19-92 Katelyn to Demol/transfer
f 01	f	f 02	f	f
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		
05		13		
05		14		
05	20 LBS	15		
2051-S001	20 LBS	2051-E001	DT 6	2-20-92 Katelyn to Demol/transfer
f 01	f	f 02	f	f
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03	20 LBS	09		
	6.00 LBS			

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>PAIL BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL # BAG</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2051-5004	20 LBS	2051-5010	PIT 6	2-20-92 <i>Handy</i> TO DEMO / STROY
04		11		
04		12		
2052-5001	20 LBS	2052-5001	PIT 6	2-21-92 <i>Handy</i> TO DEMO / STROY
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
2055-5001	20 LBS	2055-5001	PIT 6	2-24-92 <i>Handy</i> TO DEMO / STROY
01		02		
02		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
2055-5004		11		
5004		12		
2056-5001	20 LBS	2056-5001	PIT 6	2-25-92 <i>Handy</i> TO DEMO / STROY
01		02		
01		03		
02		04		
02		05		
02		06		

580 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**PAIL
BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #
BAG**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2056-5003	20 LBS	2056-5007	PIT 6	2-25-92 / Colby to Demo/Storage
S 03	S	S 08	S	S
03		09		
04		10		
04		11		
04		12		
2057-5001	20 LBS	2057-5001	PIT 6	2-26-92 / Colby to Demo/Storage
S 01	S	S 02	S	S
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		
2058-5001	20 LBS	2058-5001	PIT 6	2-27-92 / Colby to Demo/Storage
S 01	S	S 02	S	S
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**PAIC
BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PIT #
BAG**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2051-5005	20 LBS	2051-E013	PIT 6	2-27-92 Krieger to Demo/Store
		14		
		15		
		16		
		17		
	20 LBS	18		
	826 LBS	19		
	96 LBS	20		
2063-5001	20 LBS	2063-E001	PIT 6	3-3-92 Krieger to Demo/Store
		02		
		03		
		04		
		05		
		06		
		07		
		08		
		09		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
2063-E018		2063-E018		
2063-E018	20 LBS			

1402 LBS

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>PAIL BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL # BAG</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2064-5001	20 LB	2064-E001	PIT 6	
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		
05		13		
05		14		
05		15		
06		16		
06		17		
2064-5006	20 LB	2064-E018		
2065-5001	20 LB	2065-E001	PIT 6	
01		02		
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
2065-5004	20 LB	2065-E018		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

**PAIL
BAG
NUMBER**

**EXPLOSIVE
WEIGHT**

**SERIALIZED
PAIL #
BAG**

**EXCAVATED
AT:**

**DISPOSITION
AND DATE**

2065-5005	20 LBS	2065-E013	PIT 6	3-5-92 Scarp to 10m Stone
S 05	S	14	S	
05		15		
06		16		
06		17		
2065-5006	20 LBS	18		
2066-5001	20 LBS	2066-E001	PIT 6	3-6-92 Scarp to 10m Stone
01		02	S	
01		03		
02		04		
02		05		
02		06		
03		07		
03		08		
03		09		
04		10		
04		11		
04		12		
05		13		
05		14		
05		15		
06		16		
06		17		
2066-5006	20 LBS	2066-E018		
S 07	S	019	S	
07		020		
07		21		
08		22		
08		23		
AS OF 3-6-92 (522) 600 LBS		24		

**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>PAIC -BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED -PAIC # BAG</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2070-5001	20 LBS	2070-E001	PIT 6	3-10-92 <i>Handlog</i> to <i>demo/storage</i>
	01	02		
	01	03		
	02	04		
	02	05		
	02	06		
	03	07		
	03	08		
	03	09		
	04	10		
	04	11		
	04	12		
	05	13		
	05	14		
2070-5005	20 LBS	2070-E015		
2071-5001	20 LBS	2071-E001	PIT 6	3-11-92 <i>Handlog</i> to <i>demo/storage</i>
	01	02		
	02	03		
	02	04		
	02	05		
	02	06		
2071-5003	20 LBS	2071-E007		
2077-5001	18 LBS	2077-E001	PIT 8	3-17-92 <i>Handlog</i> to <i>demo/storage</i>
2078 5001	20 LBS	2078-E001	PIT 8	3-17-92 <i>Handlog</i> to <i>demo/storage</i>
	01	02		
	01	03		
	02	04		
	02	05		
	02	06		

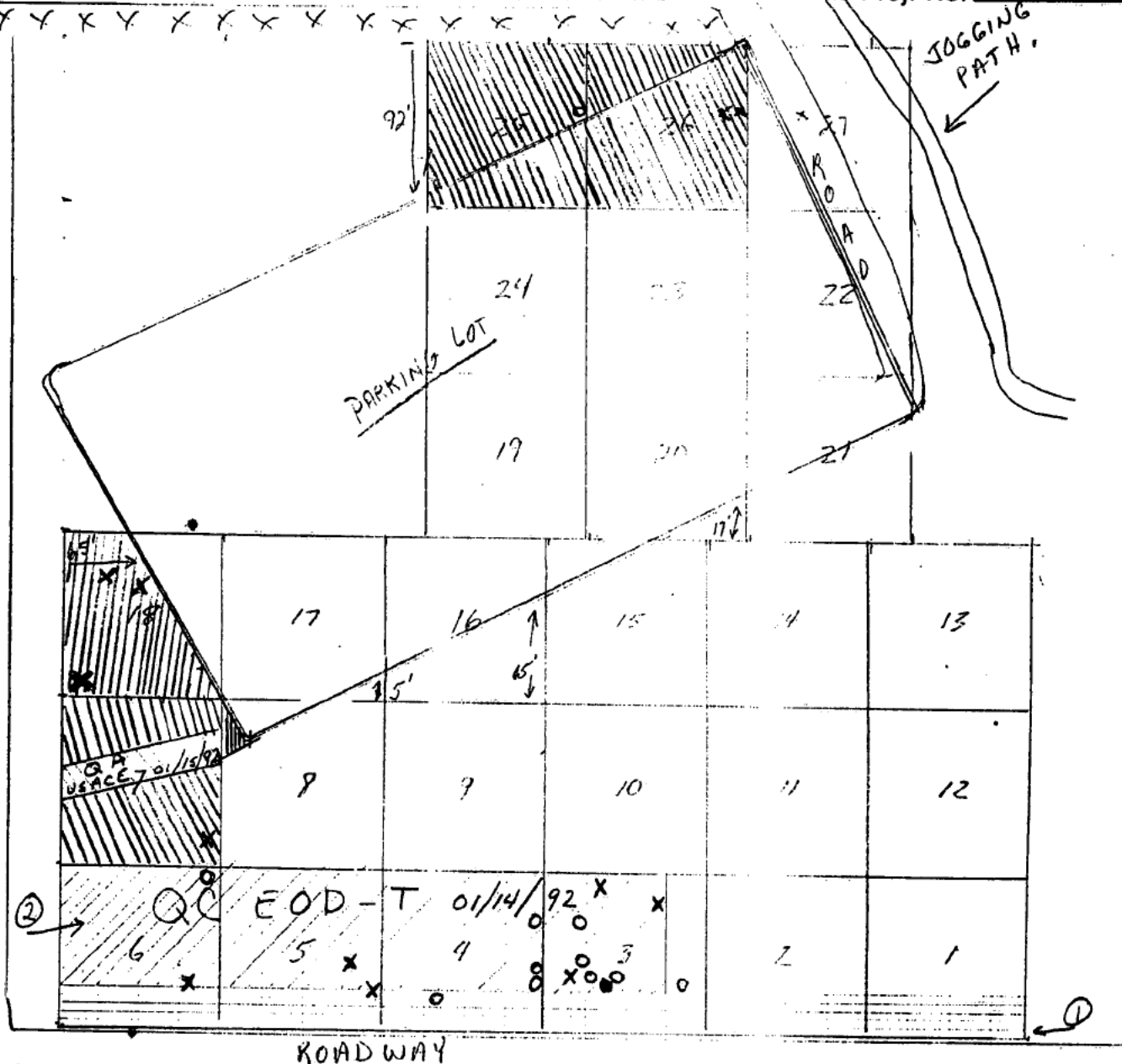
**EOD TECHNOLOGY, INC.
EXPLOSIVE RECOVERY LOG FOR SITE 4**

<u>PAIL BAG NUMBER</u>	<u>EXPLOSIVE WEIGHT</u>	<u>SERIALIZED PAIL # BAG</u>	<u>EXCAVATED AT:</u>	<u>DISPOSITION AND DATE</u>
2078-5003	20 LB	2078-1207	PIT 8	3-18-92 <i>Relayed to Demo/Storage</i>
03	/	18	/	/
03	/	19	/	/
04		20	/	/
04		"	/	/
04		21	/	/
05		22	/	/
05		23	/	/
05		"	/	/
06		"	/	/
06		"	/	/
2078-5006	20 LB	2078-1208		
2079-5001	20 LB	2079-1201	PIT 8	3-19-92 <i>Relayed to Demo/Storage</i>
01	20	02	/	/
01	31	03	/	/
=====				
	12,180.5	TOTAL WT HE RESIDUE		
	=			
2080-5001	90 LB	2080-1201	PIT 8	3-20-92 <i>Relayed to Demo/Storage</i>
2080-5002	90 LB	2080-1202	S	/
	12,360.5	TOTAL WT HE RESIDUE REMOVED		
	=			

ATTACHMENT 15



Date _____ Subject PARKING LOT IN SITE 10 Sheet No. _____ of _____
Chkd. By _____ Date _____ Proj. No. _____



- ① - 30' ALONG ROADWAY - SATURATED WITH ROCKS, HAS NOT BEEN DONE.
- ② - AREA QC EOD-T 01/14/92 (PASS) AREAS 3, 4, 5, 6
- ③ AREA QC EOD-T 03/17/92 PASS AREAS 18, 25, 26, 7
- SITE 10 HAS 27 AREAS - 105' X 115' (APPRX)
- PARKING LOT IS SITUATED IN APPRX 9 AREAS OR 30% WHICH
- PREVENTS MAPPING AND HAND DIGGING.
- OF THE REMAINING 70% OF SITE 10 3.75 AREAS OR 22% HAVE BEEN QC BY EODT.
- QC COVERED 10% OF AREAS 3, 4, 5, 6.

X - UXO
O - NEW

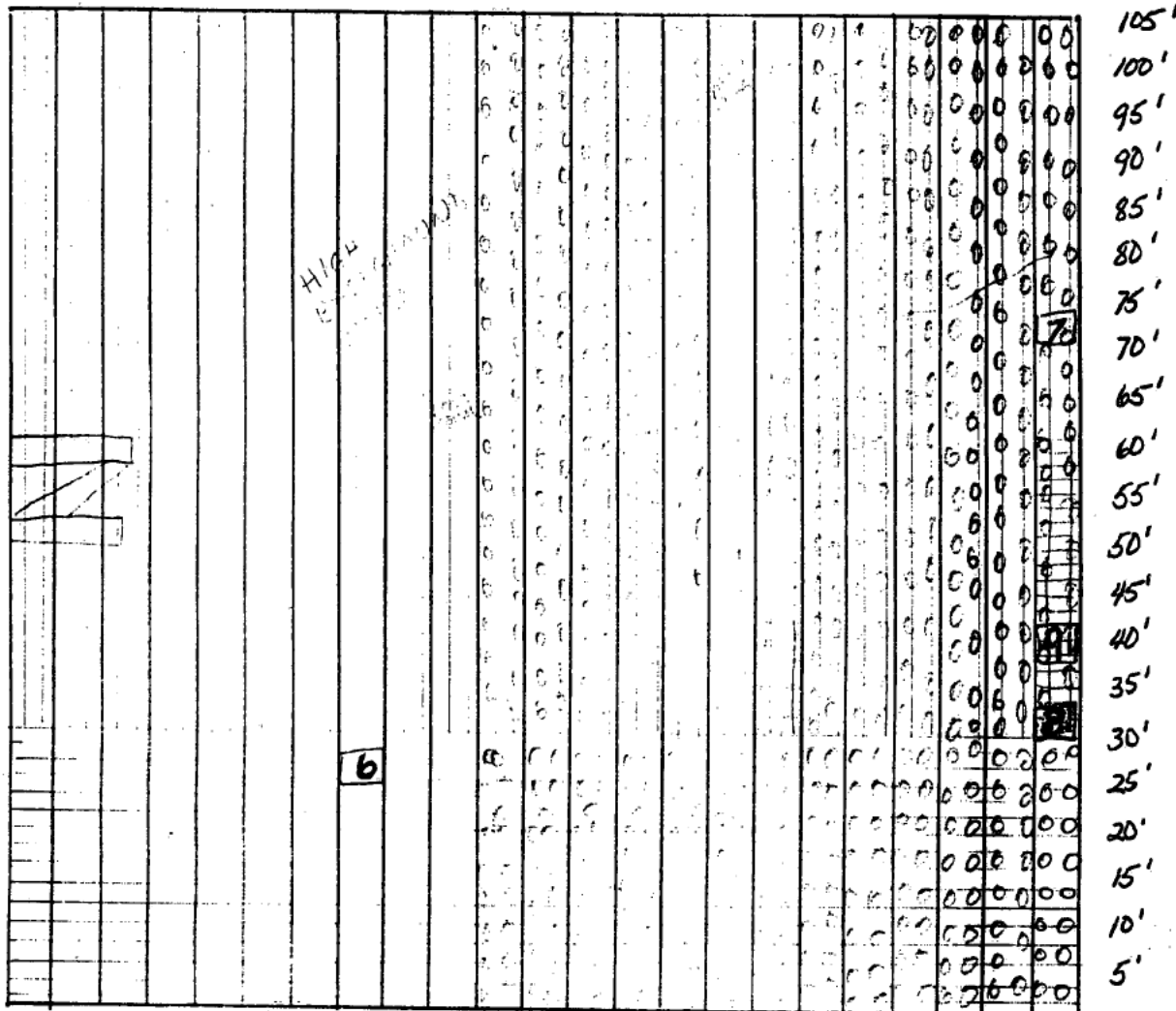


Chkd. By _____ Date _____ Subject SITE 10 Sheet No. _____ of _____
AREA 4 Proj. No. _____

N →

AREA 9

LANE 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



AREA 3

CHES →
AREA 5

115' 110' 105' 100' 95' 90' 85' 80' 75' 70' 65' 60' 55' 50' 45' 40' 35' 30' 25' 20' 15' 10' 5' 0'
 ROADWAY

00-
00- INDICATES AREA THAT WAS MAPPED
AND PLOTTED - NO DIGGING DONE

- ITEMS 8+9 FOUND IN BOTTOM OF DURING
SCREEDING

$\frac{1}{4}'' = 5'$



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AREA 4

11/14/91



y _____ Date _____ Subject _____ Sheet No. _____ of _____
Chkd. By _____ Date _____ Proj. No. _____

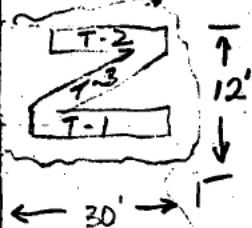
HIGH BACKGROUND READINGS

AREA 5

HIGHEST BG.

AREA 4

AREA 3



60'

ROADWAY

DUG, HIT WATER TABLE ITEM NOT FOUND



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TECHNOLOGY
CORPORATION

By _____ Date _____ Subject SITE 10

Sheet No. _____ of _____

Chkd. By _____ Date _____ AREA 5

Proj. No. _____

AREA 8

LANE 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

AREA 6

AREA 4

115' 110' 105' 100' 95' 90' 85' 80' 75' 70' 65' 60' 55' 50' 45' 40' 35' 30' 25' 20' 15' 10' 5' 0'

ROADWAY

WOODEN WIRE
WRAPPED SEWAGE PIPE

$\frac{1}{4}'' = 5'$



by _____ Date _____ Subject SITE 10 Sheet No. _____ of _____
Chkd. By _____ Date _____ AREA 6 Proj. No. _____

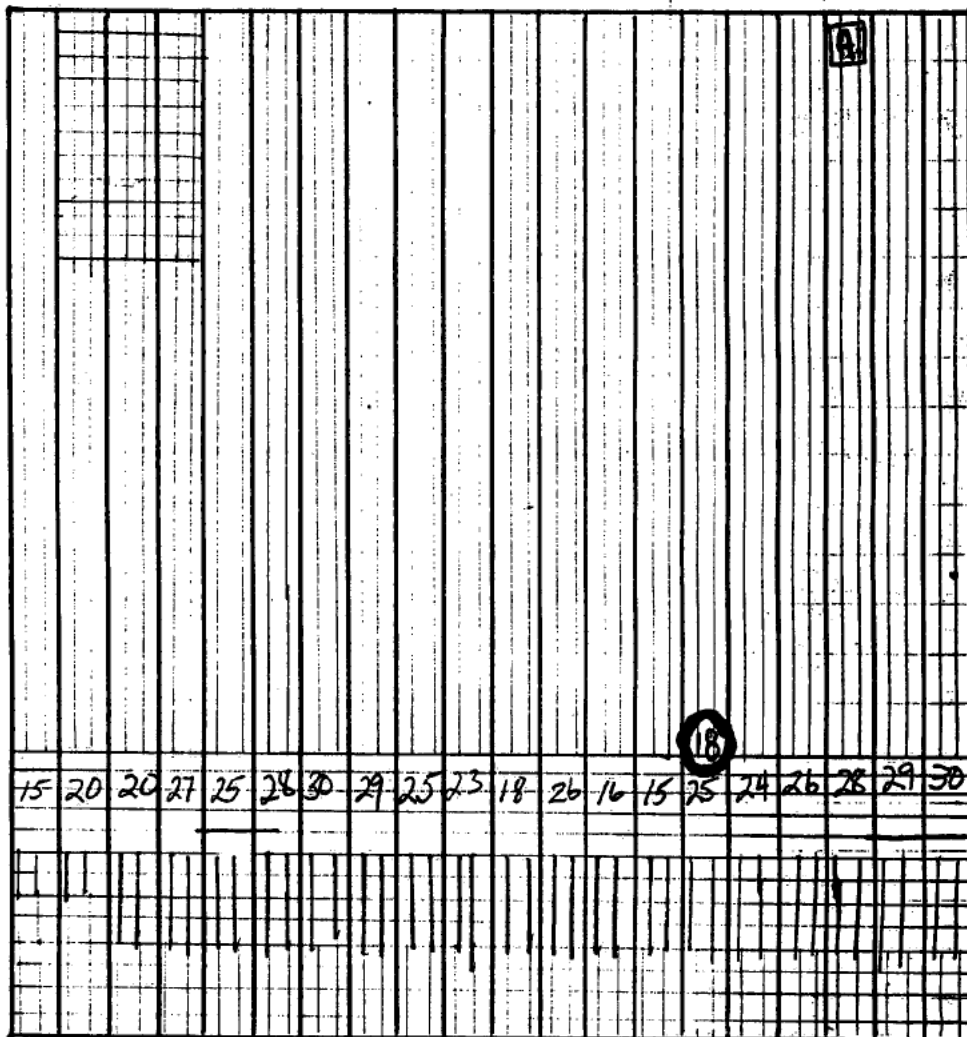
AREA 7

LANE

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

DITCH
AREA

ROADWAY



100' 95' 90' 85' 80' 75' 70' 65' 60' 55' 50' 45' 40' 35' 30' 25' 20' 15' 10' 5'

ROADWAY

* AREA 6 = HAS ONLY 20 LANES 100'W X 105'D



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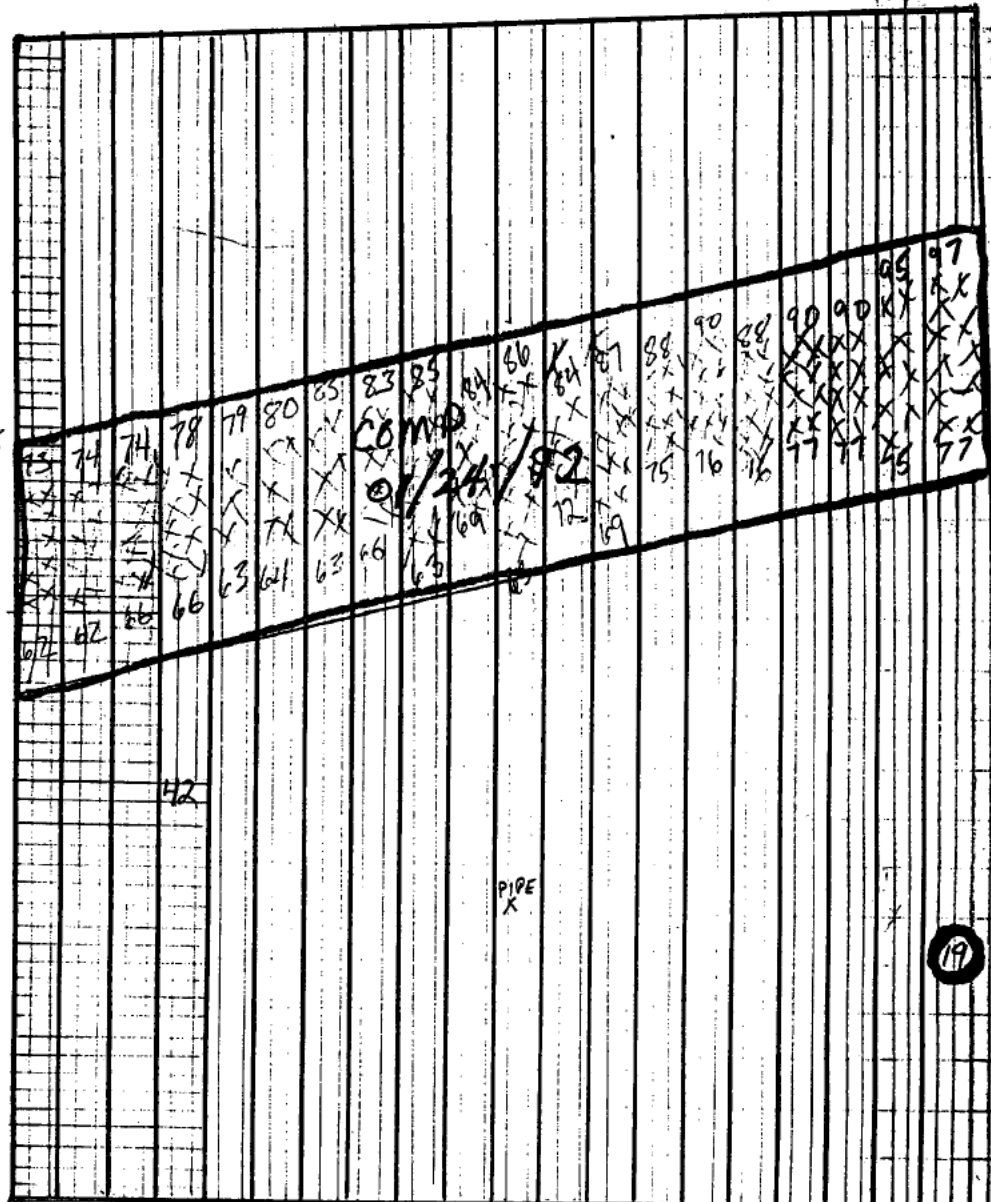
by _____ Date _____ Subject SITE 10 Sheet No. _____ of _____
Chkd. By _____ Date _____ AREA 7 Proj. No. _____

AREA 18
← 100' →

LANE 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

DITCH
AREA

ROAD
WAY



105' 100' 95' 90' 85' 80' 75' 70' 65' 60' 55' 50' 45' 40' 35' 30' 25' 20' 15' 10' 5'

← 103' →

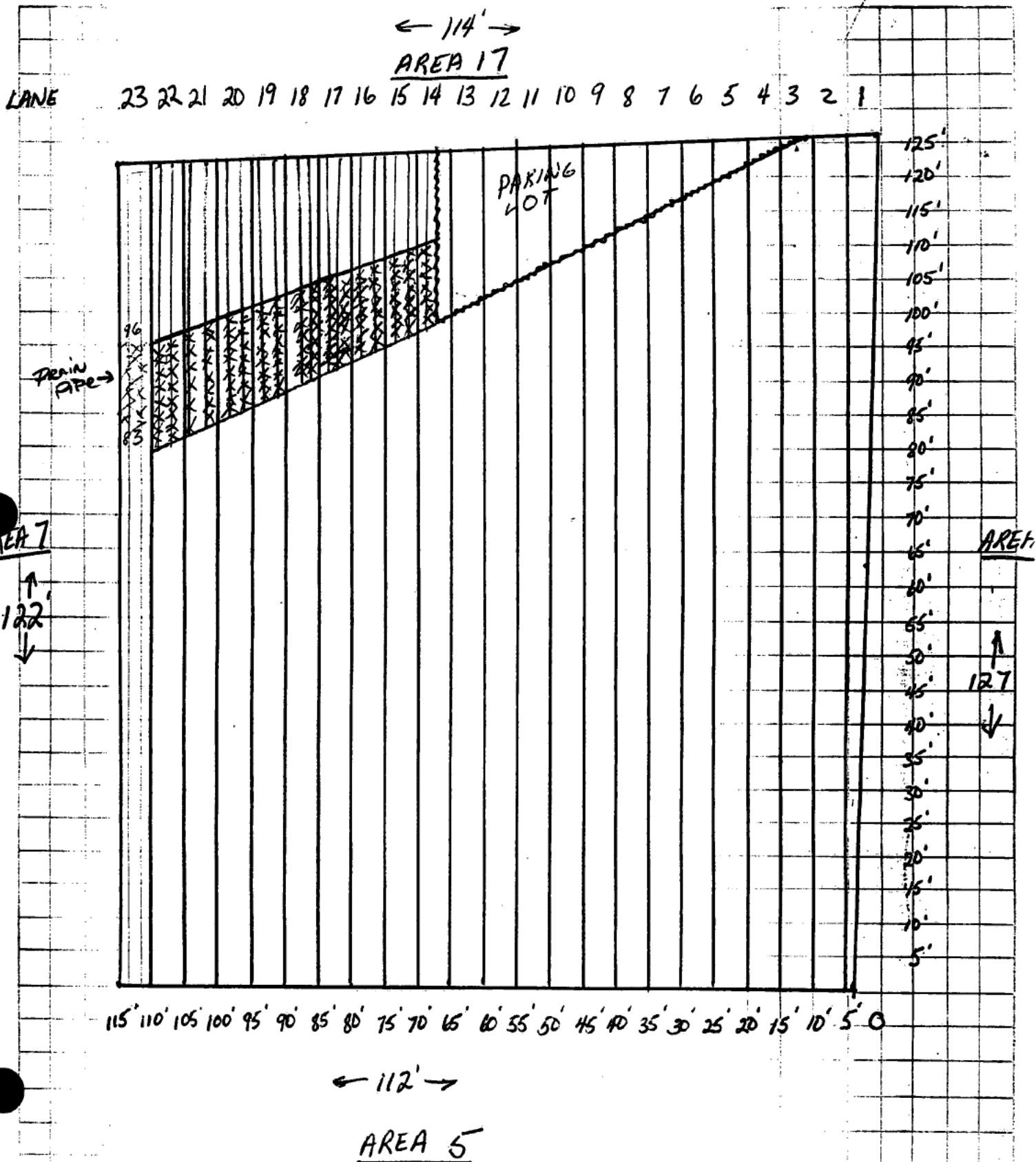
AREA 6



INTERNATIONAL
TECHNOLOGY
CORPORATION

By _____ Date _____ Subject SITE 10 Sheet No. _____ of _____

Chkd. By _____ Date _____ AREA 8 Proj. No. _____

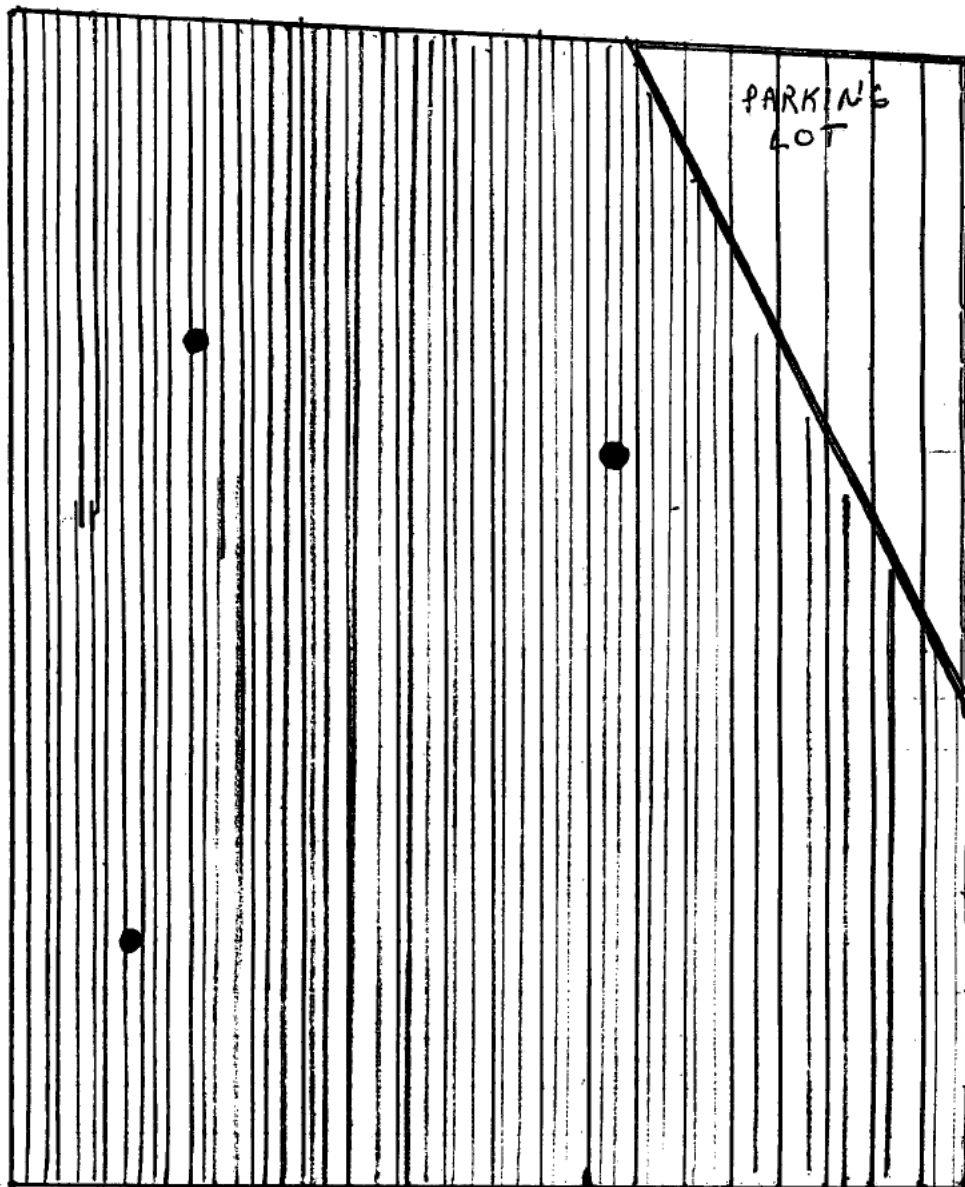




By _____ Date _____ Subject SITE 10 Sheet No. _____ of _____
Chkd. By _____ Date _____ AREA 18 Proj. No. _____

← 101' →

LANE 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



115'
110'
105'
100'
95'
90'
85'
80'
75'
70'
65'
60'
55'
50'
45'
40'
35'
30'
25'
20'
15'
10'
5'

AREA 17

↑ 115'
↓

100' 95' 90' 85' 80' 75' 70' 65' 60' 55' 50' 45' 40' 35' 30' 25' 20' 15' 10' 5' 0

AREA 7

← 100' →

ROADWAY



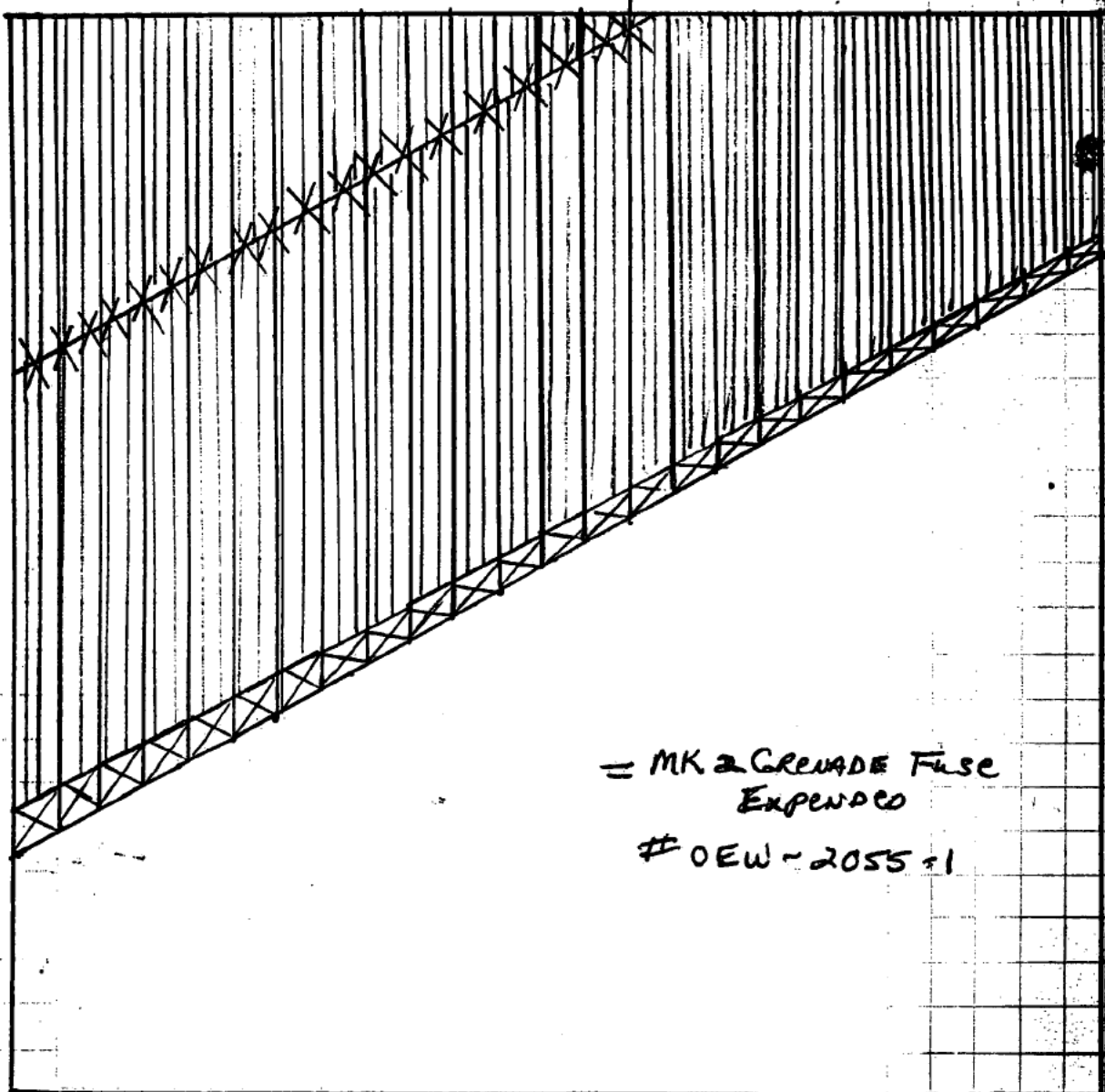
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CORPORATION



MAC Date Feb 92 Subject SITE 10 Sheet No. 1 of
Chkd. By Date AREA - 25 Proj. No. T.A.E. PARK

ROADWAY

25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



120'
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5

AREA 21

= MK 2 GRENADE FUSE
EXPENDED
OEW - 2055 + 1

AREA - 24

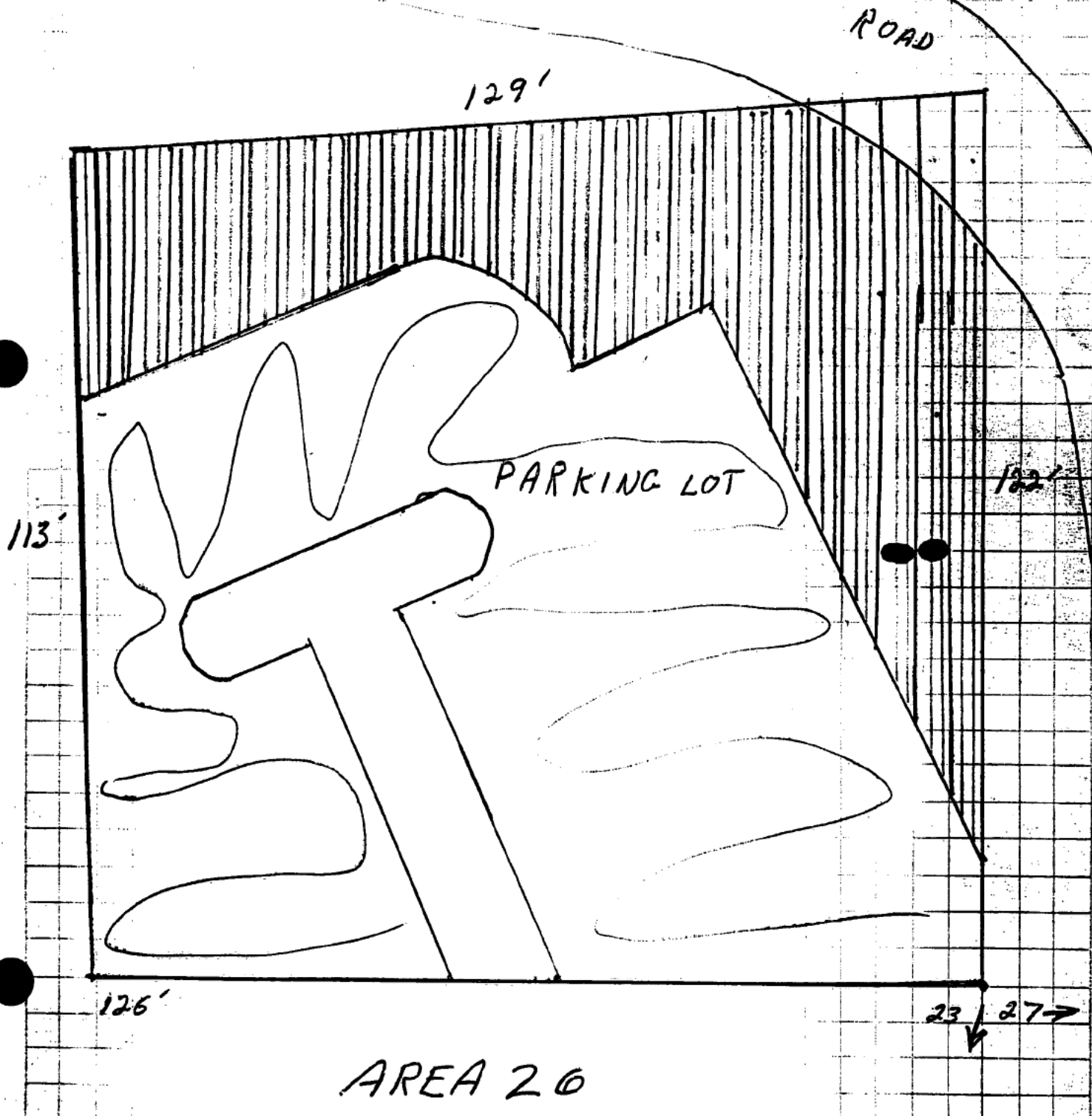
X = PIPELINE / SIDEWALK



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TECHNOLOGY
CORPORATION



By SAM Date 20 Feb 92 Subject SITE 10 Sheet No. of
Chkd. By Date AREA 26 Proj. No.



ATTACHMENT 16

EOD TECHNOLOGY, INC.
FORMER RARITAN ARSENAL PROJECT

ORDNANCE ACCOUNTABILITY LOG (10)

DATE	SITE	ORDNANCE RECOVERED	STORAGE LOCATION	DATE DEST.	REMARKS
10/17/91	10 AREA 3 LANE 2	1EA 316. US PRACTICE BOMB	SITE 16	11/07/91	OEW 1290-1
10/18/91	10 AREA 5 LANE 1	1EA FRENCH RIFLE GRENADE	SITE 16	11/07/91	UXO 1291-1
10/21/91	10 AREA 5 LANE 5	1EA FRENCH RIFLE GRENADE	SITE 16	11/07/91	UXO 1294-1
11/05/91	10 AREA 6 LANE 3	1EA EXPENDED MK2 GRENADE FUZE	SITE 16 (BOX 14)	12/05/91	OEW 1309-1
11/05/91 LIT @ 86'	10 AREA 18 S.W. COR.	1EA FRENCH RIFLE GRENADE	SITE 16	11/07/91	UXO 1309-1
11/07/91	10 AREA 4 LANE 15	1EA EXPENDED MK2 GRENADE FUZE	SITE 16 (BOX 14)	12/05/91	OEW 1311-1
11/19/91	10 AREA 4 LANE 1	1EA EXPENDED MK2 GRENADE FUZE	SITE 10	12/05/91 10/21	OEW 1323-1
11/20/91	10 AREA 4 LANE 1	1EA EXPENDED MK2 GRENADE FUZE	SITE 16 (BOX 14)	12/05/91	OEW 1324-1
11/20/91	10 AREA 4 LANE 1	1EA EXPENDED MK2 GRENADE FUZE	SITE 16 (BOX 14)	12/05/91	OEW 1324-2
11/21/91	10 AREA 3 LANE 20	1EA FRENCH RIFLE GRENADE	SITE 16	12/05/91	UXO 10-1325-1
11/22/91	10 AREA 3 LANE 17	1EA EXPENDED MK2 GRENADE FUZE	SITE 16	12/05/91	OEW 10-1326-1
11/22/91	10 AREA 3 LANE 16	1EA FRENCH RIFLE GRENADE	SITE 16	12/05/91	UXO 10-1326-1
11/22/91	10 AREA 3 LANE 17	1EA EXPENDED MK2 GRENADE FUZE	SITE 16	12/05/91	OEW 10-1326-2
11/25/91	10 AREA 3 LANE 16	1EA EXPENDED MK2 GRENADE FUZE	SITE 16	12/05/91	OEW 10-1329-1
11/26/91	10 AREA 3 LANE 13	TBD DETERMINED TO BE A NON-ORD ITEM 12/05/91	SITE 16	12/05/91	OEW 10-1330-1

ORDNANCE ACCOUNTABILITY LOG

[illegible]

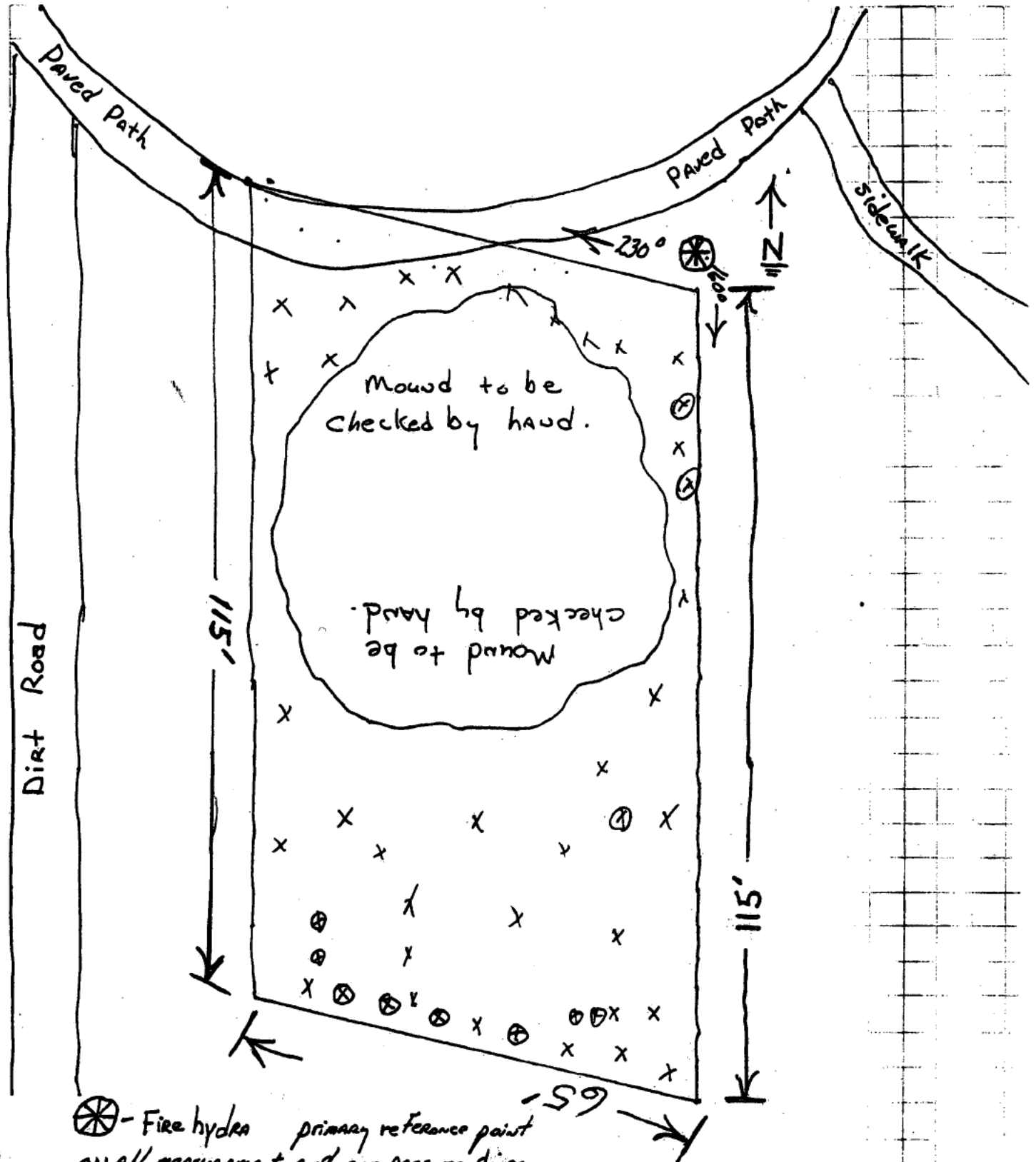
ATTACHMENT 17

WORK PLAN
THOMAS EDISON PARK (AREA 10)
FILL PILE # 1

This area is located on the campus of Middlesex County College. The area is approximately 115' X 65' and contains a fill pile 25' at the base and 9' high. The site is moderate to heavily vegetated. As per meeting on site with Robert Nore, CE, Huntsville, George Spencer, CE, Huntsville and Dr. L. Chan, IT, this area is required to be "Checked and cleared".

We (EODT) will start by laying sweep lines and then checking the entire area with a magnetometer. All hits will be recorded and dug by hand to a depth of 10". Items deeper than that will be excavated using a Case 580 loader/backhoe. Each bucket of excavated soil will and the exposed ground surface will be examined for any munitions or related hazards. All excavated areas will be backfilled.

By _____ Date 21 Aug 91 Subject AREA checked 21 Aug 91 Sheet No. _____ of _____
Chkd. By _____ Date _____ MAP Not to scale Proj. No. _____



- ⊗ - Fire hydrant primary reference point on all measurement and compass readings
- x - Mag hit nothing found
- ⊙ - Mag hits backhoe needed.
- - Ordnance found